CANADIAN
PUBLIC HEALTH JOURNAL

VOL. 31, NO. 4 APRIL, 1940

Mental Hygiene in Canada*

J. D. M. GRIFFIN, M.D., M.A., D.P.M.
Associate Medical Director
National Committee for Mental Hygiene (Canada)

The Extent of the Problem

IT is always difficult to estimate with any degree of accuracy the morbidity and the extent of disability due to mental illness. Recognizing as we do that mental illness may be of any degree of seriousness, there are doubtless thousands of individuals in Canada suffering from mild symptoms of mental disease who are unknown to the authorities. It is also true that there are other thousands suffering from frankly serious mental illness who are being cared for privately in their own homes, or through special provisions arranged by their own families. These are also unknown to the authorities. Since 1931 an effort has been made by the Dominion Bureau of Statistics, in co-operation with the Provincial Departments of Health and the National Committee for Mental Hygiene, to keep an account of the number and type of mental patients in Canada, together with the cost of care and treatment, etc. When a patient is admitted to any recognized mental hospital in Canada (whether private, Provincial or Dominion) a card is filled out for that patient and sent to Ottawa. Other cards are filled out when the patient is moved to another institution, is discharged, or dies. From these cards detailed statistical reports of the mental institutions in Canada have been available from the Dominion Bureau of Statistics since 1931.

Realizing these statistics represent only a partial picture, it is, nevertheless, interesting to note that there has been an increase in both the number of mental hospital beds and of patients in residence in mental hospitals each year since figures have been compiled. The latest available figures are for 1937.

Table I shows the normal bed capacity and the number of patients in residence on the last day of the year in all mental institutions, 1931-1937.

**Adapted from a paper presented at the Psychiatric Seminar of the Toronto Psychiatric Hospital, January 13, 1940.*

TABLE I*

Year	Normal Capacity	Per cent. increase in bed capacity	Patients in residence	Per cent. increase in resident patients	Per cent. excess of inmate population over bed capacity	Resident patients per 100,000 of mean population
1931.....	31,832	—	31,686	—	—	305.4
1932.....	32,919	3.4	32,878	3.8	—	316.6
1933.....	33,451	1.6	34,979	6.4	4.5	324.9
1934.....	34,866	4.3	36,571	4.6	4.9	335.6
1935.....	35,987	3.2	38,261	4.6	6.3	348.2
1936.....	37,379	3.9	39,833	4.1	6.6	359.5
1937.....	37,798	1.1	41,677	4.6	10.3	373.5

**From the Sixth Annual Report of Mental Institutions, 1937. Dominion Bureau of Statistics, Ottawa, 1939.*

The continued increase in the population of mental institutions has presented a serious problem, since urgent cases must be admitted in spite of overcrowding. The percentage excess of inmate population over bed capacity has increased from 4.5 in 1933 to 10.3 in 1937. Preliminary reports show that in all probability it will be even higher in 1938 and 1939. The annual increase in "normal capacity" of the hospitals is difficult to explain. Very few buildings of major importance had been built in connection with any of the hospitals during these years. One must surmise that for the most part the increases in capacity represent more beds crowded into spaces already overcrowded.

The figures in table I represent only part of the picture. When we add to the 41,677 patients who were in residence in mental hospitals on December 31, 1937, the 3054 who were on parole or otherwise absent, a total of 44,731 patients is obtained.

This rather ominous increase in the number of patients in residence in mental hospitals requires careful interpretation. An analysis of the statistics concerning mental illness in the State of Massachusetts since the year 1904 shows that although there has been a regular increase each year in the number of patients in residence, only 16 per cent. of this increase was due to an increase in the number of admissions or readmissions (1). In other words, the number of patients in Massachusetts becoming mentally ill each year is not increasing to any great extent. A more important factor seems to be the lengthening hospital stay of the patients, amounting at the present time in that State to over nine years on the average. The Fifth Annual Report of Mental Institutions in Canada contains this significant statement (2):

"The continued increase in the number of patients under care, as has been pointed out in previous reports, should not be construed as a real increase in the incidence of mental disorders among the general population. Increase in the number of patients in any given year is not related to the birth rate in that year, but to the birth rate of a period at least a generation earlier. Mental disorders are, in the main, disorders of adult life, the average of insane first admissions in 1936 being 43 years. The increase in the mental population may be further explained by the fact that among those who take an active interest in the care and treatment of persons suffering from mental sickness there is an increasing demand for

early treatment of mental diseases. The large number of mental health clinics, particularly in the province of Ontario, for the early treatment of mental diseases may have some bearing on the numbers admitted to mental institutions in that province for care and treatment. The steady increase in the number of elderly people admitted to mental institutions suffering from the senile psychoses is also a part cause for the increase in the resident population of our mental institutions."

How long will this annual increase continue? By careful perusal of the of the reports of some of the States where records have been kept for many years (e.g., Massachusetts and New York) we find that the resident patient population is beginning to reach a plateau. This appears to be in the neighbourhood of between 500 and 600 resident patients per 100,000 mean population. In this connection, the following European figures of recent date are of interest:

TABLE II*

Country	Year	Patients per 100,000 mean population
England	1931	477
Sweden	1930	378
Finland	1934	258
Poland	1931	70

*Landis, Carney & Page, *Modern Society and Mental Diseases*. Farrar & Rinehart, Inc., New York, 1938 (p. 168).

In England the admission rates and the resident population have not changed very significantly during the last few years.

From this we might conclude that we can expect an annual increase in the resident population in Canadian mental hospitals, until the accommodation for patients reaches about 500 per 100,000 mean population. In other words, not only are the present facilities hopelessly inadequate, but unless a progressive building program is undertaken soon, conditions will become even worse as the general population increases.

An effort is being made to meet the serious problem of overcrowding by the judicious use of parole and boarding out of patients in private homes (3). Nevertheless, it is undoubtedly true that many patients are being paroled home long before they are really well enough. In some provinces, disused jails, schools and college buildings are providing a temporary solution. But these are rarely, if ever, completely adequate as mental hospitals, and are usually expensive to maintain.

THE MENTAL HOSPITALS

There are 57 institutions for the care and treatment of patients suffering from mental disease. Thirty-five of these institutions are provincial hospitals, of which 5 are training schools for mental defectives. Two are psychiatric hospitals, serving principally a large municipal area (i.e., the Toronto Psychi-

atric Hospital and the Winnipeg Psychopathic Hospital); two are Dominion hospitals, which are principally used for army and navy veterans, and four are private institutions. The remaining 14 institutions are made up of county and municipal hospitals, asylums, and poor-homes, in which mental patients are cared for and all of which are located in Nova Scotia. The number of mental hospitals by provinces, together with their normal bed capacities, is given in table III and is compared with the total number of hospitals of all other types.

TABLE III

HOSPITALS AND HOSPITAL BEDS, CANADA, 1937*

	Population(1) (est.) "000's" omitted	Mental(2) hospitals	Beds (normal capacity)	Ratio(4) of beds to population over 15 years of age	All(5) other hospitals	Beds (normal capacity)	Ratio of beds to population
				one bed to every:			one bed to every:
Canada.....	11,014	57	37,798	204	869	63,295	174
Prince Edward Is.	92	1	275	234	5	348	264
Nova Scotia.....	537	16(3)	2,166	173	33	2,517	213
New Brunswick..	435	1	1,025	297	28	2,016	216
Quebec.....	3,096	9	11,574	189	114	16,712	186
Ontario.....	3,690	16	13,303	194	240	20,309	178
Manitoba.....	711	4	2,232	223	49	4,479	159
Saskatchewan ...	931	2	2,600	251	154	5,215	179
Alberta.....	772	4	2,118	255	138	5,180	149
British Columbia. (including Yukon and N.W.T.)	764	4	2,455	218	107	6,519	115

*From the Sixth Annual Report of Mental Institutions, 1937 (Ottawa, 1939), and the Annual Report of Hospitals, 1937 (Ottawa, 1938).
(1)—Estimated by Dominion Bureau of Statistics for 1937.
(2)—Includes Provincial, Dominion and private mental hospitals and five training schools for mental defectives.
(3)—Includes 14 county and municipal homes and asylums.
(4)—Since patients in mental hospitals are almost always adults (average age 43), the number of hospital beds is compared to the adult population only.
(5)—Includes paediatric, maternity, Red Cross, tuberculosis, general and convalescent hospitals.

It is rather surprising that the ratio of beds in mental hospitals to the pertinent population approaches that of all the other hospitals combined, including tuberculosis sanatoria and the large general hospitals. Table III also shows the variation in the supply of mental hospital beds from province to province. Statistically, Nova Scotia heads the list, with one bed for every 173 of the population over 15 years of age. The reason for this, of course, is that included in the number of beds are all those located in municipal hospitals, poor-homes, etc. A large proportion of these beds, but by no means all, are utilized for the mentally ill. The provinces least adequately supplied with beds for the mentally ill are New Brunswick, Alberta and Saskatchewan. The Government in Alberta has attempted to correct this condition in part by setting up small units of about 100 beds each in two disused agricultural colleges (Claresholm and Raymond).

The per caput cost of these institutions is rather high, however, and from the point of view of a long term program, it is problematical whether this is a practical solution. In Saskatchewan the construction of another mental hospital has been under consideration by the authorities for some time. The needs from the mental hygiene point of view in New Brunswick are many. From time to time there has been talk of establishing another hospital to serve as a training school for mental defectives (one of the major problems). The present status of these plans is not known.

Some years ago the American Psychiatric Association established hospital standards for the guidance of authorities responsible for the administration of mental hospitals.

One of these standards requires that:

"There must be an adequate medical staff of well-qualified physicians, the proportion to total patients to be not less than 1 to 150; and to the number of patients admitted not less than 1 to 40."

Another requires that:

"There must be an adequate nursing force, not less than a proportion of 1 to 8, and in the intensive treatment of sick and surgical services not less than 1 to 4."

Other standards refer to the necessity of regular staff conferences; the classification of patients; the organization of a reception and intensive treatment units; the adequate provision of laboratories, x-ray department, surgical, dental, hydrotherapy and occupational therapy facilities, out-patient clinic facilities and social workers, etc.

A survey of some of the larger mental hospitals in Canada in connection with these standards is summarized in table IV.

From this table it will be seen that the number of patients per physician varies from 129 in Prince Edward Island to 539 in Baie St. Paul, Quebec. A strict interpretation of the A.P.A. standards requires that superintendents be excluded from the number of physicians listed and used in calculating the ratios. The reason for this is that in most cases the time of the medical superintendents is taken up with administration, rather than the clinical care of patients. If the superintendents had not been included, the ratio of patients to physicians would be very much higher. In most of the hospitals in Ontario the number of patients per physician seems to come within the limits set by the standards. In most of the other provinces the number is far too high to allow the best type of clinical work.

The ratio of patients to nurses and attendants is reasonably low in all provinces. The one exception is in the hospital at Baie St. Paul, Que., where there are over 15 patients to each nurse and attendant.

Cost of Mental Illness

The total cost of maintaining these hospitals and their resident patients during 1937 was $14,017,403. This bill was met for the most part by Federal,

Provincial and municipal funds ($10,934,608). Only $2,225,000 was received in fees from paying patients (4).

In addition to the cost of care and treatment of patients in mental hospitals, there must be estimated the cost of caring for mentally ill patients not in mental hospitals, together with the loss to the country of the earning power of these patients. The terrific economic wastage of this last factor alone would undoubtedly run into many millions.

Research

In most of the mental hospitals in Canada, time and adequate facilities for research are lacking, and very few scientific papers have been published. Be-

TABLE IV

Hospital	Normal Capacity	Number of Patients in Residence	Physicians (including Superintendent)	Ratio of Physicians to Patients	Nurses		Attendants	Ratio of Nurses and Attendants to Patients
					Reg.	Others		
British Columbia				one to:				one to:
Essondale	1864	2825	9	314	27	131	172	8.6
New Westminster	500	606	3	202	..	48	36	7.2
Alberta								
Ponoka	1200	1558	7	223	49	41	77	9.3
Edmonton	760	756	3	252	2	..	66	11.1
Saskatchewan								
North Battleford	1000	1532	7	205	7	71	115	7.9
Weyburn	1500	2089	5	418	8	103	152	7.9
Manitoba								
Brandon	1300	1468	7	210	7	106	97	7.0
Selkirk	640	842	5	168	4	54	58	7.3
Ontario								
Hamilton	1565	1674	9	186	44	41	96	9.2
Kingston	1137	1149	8	144	45	32	82	7.2
London	1100	1592	11	145	81	15	93	8.4
New Toronto	1535	1542	12	129	89	35	99	6.9
Toronto	1189	1214	6	202	80	..	75	7.8
Whitby	1702	1680	12	140	111	31	104	6.8
Quebec								
Baie St. Paul	820	1079	2	539	1	25	45	15.2
Gamelin	5500	5678	22	258	18	148	307	12.0
Mastai	2500	2748	7	382	3	4	255	10.5
Verdun	844	1325	7	189	32	60	53	9.1
New Brunswick								
Fairville	1050	1118	5	243	19	..	82	11.1
Nova Scotia								
Dartmouth	450	457	3	152	19	53	4	6.0
P.E.I.								
Charlottetown	275	258	2	129	3	5	28	7.1

*Data for this table have been obtained from the *Sixth Annual Report of Mental Institutions, 1937* (Ottawa, 1939), and surveys made by the National Committee for Mental Hygiene (Canada).

cause of overcrowding and the smallness of the medical staff, investigative work is next to impossible. In only one or two instances has there been any appropriation made for research projects. Usually work of this kind is carried out only because of the interest and enthusiasm of the men involved.

In all provinces except Prince Edward Island (where facilities are not suitable) experiments are being conducted with one or other of the new chemical treatments for mental disease. Five out of the nine provinces are now using metrazol routinely in the treatment of certain types of patients. Seven provinces are using insulin shock therapy. In British Columbia, New Brunswick and Nova Scotia insulin only is used, metrazol being regarded as dangerous or of little value. In Alberta the results with insulin shock have not been satisfactory, and that type of treatment has been temporarily discontinued. Metrazol is used in some cases, however. In the other provinces, metrazol and insulin are being used routinely, and careful records are being kept, so as to determine the ultimate value of this type of therapy. Several papers on the results of insulin and metrazol shock have been read by members of the medical staffs of mental hospitals in every province. A few of these have been published (5-10).

In Toronto, the Department of Medical Research in the Banting Institute is cooperating with the Provincial Department of Health and the Toronto Psychiatric Hospital in conducting investigations into the physiological and biochemical reactions underlying the action of insulin and metrazol shock. This involves a special program of work, and is financed in part by the Rockefeller Foundation and the Supreme Council 33° A ∴ A ∴ Scottish Rite, Northern Masonic Jurisdiction, U.S.A.

At the Verdun hospital in Montreal research is an important part of the program. In addition to work on the results of insulin and metrazol shock, careful studies have been made into the cellular changes occurring in the brain in certain types of mental illness. These studies involved the use of biopsy material. The most recent contribution from Verdun deals with a comparison of compression fractures in the vertebrae in patients treated with metrazol, and patients suffering from idiopathic epilepsy. This important communication showed that over 34 per cent. of epileptic patients had signs of traumatic spondylosis in the mid-thoracic region, as compared with little more than 31 per cent. of patients treated with metrazol (11).

Research in the field of mental hygiene at the present time is being conducted by the National Committee for Mental Hygiene (Canada) in Toronto, Montreal and Saskatoon. The projects under way include studies of shyness among school children, and pre-school children attending health clinics. The purpose of these investigations is to determine if techniques can be evolved to direct the personality development of these shy and recessive children along more healthy lines, in the belief that if this is possible, some of the more serious types of maladjustment might be prevented. This work also is being financed by the Supreme Council 33° A ∴ A ∴ Scottish Rite, Northern Masonic Jurisdiction, U.S.A.

Recent Mental Hygiene Developments

Mental hygiene covers such a broad field of activities that it is practically impossible to survey the whole field in one short article. In most provinces the superintendents of the mental hospitals have accepted as their responsibility not only the training of their own staffs, but also the education of physicians in private practice. This is particularly so in the West, where no opportunity is lost to take part in refresher courses and present papers at local medical meetings. In Saskatchewan, for instance, Dr. MacNeill, the Commissioner for Mental Hygiene, devotes a considerable amount of his time to this type of work. In Manitoba, Dr. Pincock, superintendent of the mental hospital at Brandon, is encouraging the study of psychology and psychiatry among the members of the clergy. Throughout Ontario and the West the psychiatrists as a whole have accepted the responsibility also of community education, and members of the medical staffs are in constant demand for talks at Home and School Clubs, service clubs, study groups, and the like. In Alberta the radio is being utilized to good advantage in this field.

During the last ten years mental hygiene clinics have continued to function successfully. In Ontario, one or two clinics were discontinued, but it is likely that services will be resumed shortly. In Manitoba, owing to the increased demand for service, particularly in the Western part of the province, physicians on the staff at Brandon are devoting much of their spare time and week-ends to this type of work, without any provincial appropriation. In Alberta, travelling clinics have long been established, and are flourishing largely due to the leadership provided by their Director, Dr. MacLean, and the social worker, Mr. Kibblewhite. In British Columbia, an interesting new development is the establishment of a mental hygiene division of the Metropolitan Health Unit. This is under the direction of Dr. Hague Gundry, who until recently was with the Ontario service. It is Dr. Gundry's purpose to educate the public health nurses and teachers of Vancouver in mental hygiene practices, as well as to establish clinical services in the schools where necessary. In this effort, he has been cooperating with Dr. Crease and the provincial travelling mental hygiene clinic. In Nova Scotia, while there is no formal travelling clinic operating from the mental hospital, the provincial psychiatrist, Dr. Bryson, examines many children in various parts of the province and collaborates with the school authorities in this work. In Saskatchewan, Quebec and New Brunswick there are no travelling mental hygiene clinics, but the need for this service is recognized, and the development of such clinics is definitely on the program for the future. In New Brunswick, the Provincial Government has recently appointed Dr. Chaisson to organize a mental hygiene program. At the present time he is working as a member of the Provincial Department of Health in the schools of Saint John.

In only one province—Alberta—is sterilization of the mentally unfit carried out to any extent. In 1928, special legislation permitted the sterilization of certain patients who were mentally unfit. From 1929 until May, 1937, there were 1,008 cases passed by the Board for sterilization, and 516 of these were

operated on (12). On the average, this means about 70 patients a year are sterilized. An amendment to the 1928 legislation, passed last year, is interesting in that it allows the sterilization of patients who have been examined by the travelling mental health clinics, but who have not necessarily been admitted to mental hospitals. This amendment will make it possible to sterilize many low-grade defectives without having to wait until they can be certified and placed in training schools or mental hospitals. In British Columbia there is legislation permitting sterilization in selected cases. The law, however, does not allow these cases to be sterilized in the mental hospitals, and this increases greatly the expense of the project and limits its usefulness. In no other province is there legislation of this sort. It is probable, however, that sexual sterilization is occasionally performed in many centres in cases where medical or social reasons warrant it. There seems to be some doubt as to the legality of such procedures, especially when the patient's life is not threatened by a future pregnancy.

In the field of education, developments have been many and rapid. With the possible exception of Quebec and Prince Edward Island, every province in Canada has within the past few years adopted a new course of studies for the elementary schools, and in some cases the high schools as well. In every case this new course of study involves principles in modern education which have tremendous mental hygiene significance. No longer is importance being placed only on the teaching of factual content. The new goal in education today includes the development in the child of a wholesome and robust personality, and in this education and mental hygiene see eye to eye. While the traditional mental hygiene movement in education has involved the establishment of auxiliary classes for retarded children,* junior vocational schools for the training of these children along occupational lines, and school mental hygiene clinics in certain of the larger centres, the modern trend goes beyond these projects, and sponsors a close integration between mental hygiene principles and education itself, including teaching methods and practices. The new courses of study indicate this trend.

The National Committee has been active during the past three or four years in this field, through its Division on Education. Surveys of schools have been conducted in Saskatoon, Sask., Charlottetown, P.E.I., and York Township, Ontario, to determine not only the extent of mental and educational retardation, but to discover, in so far as it is possible, the status of the mental health of the school children. Largely based on the experience in this work, a Mental Hygiene Manual for Teachers is shortly to be published by the Committee (13).

In the same vein, the various provincial and youth training projects are valuable mental hygiene developments. It is impossible to exaggerate the danger to the country's morale and mental health, with youth, not only unem-

*_The Annual Survey of Education in Canada, 1936_, published by the Dominion Bureau of Statistics, shows that there are 437 specially trained teachers teaching 7864 mentally retarded and psychopathic children in Canada. (This does not include the training schools for mentally defective children.) The average number of children in such special or auxiliary classes is 18.

ployed and idle, but living without purpose, without a goal, and without any organized program of recreational or occupational diversion. As the present war effort continues, it is probable that most of these youth training projects will be brought into line with the military or air force programs.

Mental Hygiene and the War

The declaration of war has placed renewed emphasis on the importance of mental hygiene in Canada. The maintenance of the mental health of the civilian population is as important as the maintenance of morale among the troops. So far, there has been very little exposure of the civilian population to any of the hazards of war. Fortunately, we have been, and are likely to remain, immune to the horrors of aerial bombardment, gas attacks and the like. Nevertheless, the feelings of excitement and anxiety among civilians as a result of the war are noticeable, especially in certain areas. In some of the eastern seaports, for example, where much naval and military activity is taking place, one can almost feel this tension in the atmosphere. It is unlikely, however, that this emotional tension will cause an increase in mental illness as such. As a matter of fact, it often happens that many individuals who ordinarily are quite ineffectual because of disabling emotional maladjustments and neurotic tendencies, become very useful and effective citizens in time of crisis. In this same connection, it has been shown by the experience of recent wars that mental illness among civilians does not seem to increase, even when the civilian population is subjected to terrific hardships and horrifying experiences (14).

Even though the fact that the country is at war may lead to no increase in the mental health hazards, there is a very real possibility that in the enthusiasm and excitement of the war effort, essential services and facilities will be seriously disrupted. In the last war, for example, not only were the staffs of the mental hospitals seriously, and needlessly, weakened, but in some instances the hospital buildings themselves were utilized for military purposes, seriously handicapping the care and treatment of the mentally ill. It is not an exaggeration to say that it took many years following the war to correct the mistakes which were made in this connection. These mistakes should not be repeated.

The mental hygiene of the army, navy and air force is another aspect of the problem. To date the mental health of these men has been the concern of the various medical officers. Lieut.-Col. Colin Russel has been appointed Consultant in Neuropsychiatry to the D.G.M.S., and has been projecting plans for the education of these medical officers in the diagnosis and treatment of nervous and mental illness. A neurological hospital unit has been planned, and is in the process of organization.

All these efforts are directed primarily toward the detection and correction of nervous and mental conditions after they arise. The prevention of such conditions has apparently received but little consideration as yet. It is true some attention is being given to problems of morale, recreation, organized games, counselling, etc., by the various auxiliary services concerned; but the

problem of integrating all the services having mental hygiene value under some director of mental hygiene remains as an interesting possibility. Psychiatrists so far have had little or no part to play in this field.

Some Acute Problems

A brief survey such as this would be incomplete were not mention made of some of the serious difficulties and obstacles in the path of mental hygiene development throughout Canada. Mention has previously been made of the fact that overcrowding in the mental hospitals is most acute. One of the sad results of this overcrowding is the increased difficulty in handling adequately the problem of tuberculosis among patients. Many of the hospitals are making valiant efforts to x-ray the hospital population routinely every year. Where equipment is lacking or staff is small, this is impossible. Unless something approaching an annual survey of mental patients for tuberculosis is attempted, the problem soon gets out of hand. Infection spreads from patient to patient very quickly, and unfortunately also from patients to the staff. The utilization of segregation and infectious routines have done much to keep the tuberculosis rate down. Overcrowding, however, remains as the one serious obstacle in the path of complete control.

Along with overcrowding, the fact that the medical staffs of our hospitals are so small, and often, therefore, overworked, is creating a serious problem everywhere. Not only are our hospitals for the most part inadequately staffed, but the salaries of the physicians are, by and large, too low. Great difficulty is encountered in some of the provinces in obtaining suitable medical officers who intend to remain and make psychiatry their life work. Too often, if young medical graduates join the staff, it is only as a stop-gap till more attractive opportunities appear. For the men who have remained for several years in this specialized work, little is offered in the way of promotion or raise in salary, to encourage enthusiasm, interest and loyalty. Added to this is the very real danger that many of these men will now leave the mental hospital service, to take commissions in the R.C.A.M.C. Already some of the hospitals have been affected in this way.

In many provinces, also, accommodation and living quarters for the medical staff are quite inadequate. Although some provinces have arranged a system of post-graduate training, in most cases this is in abeyance at the present time. All these factors are making it extremely difficult to maintain the morale of the staffs, and are directly and seriously handicaping mental hygiene work in Canada.

SUMMARY AND CONCLUSIONS

An attempt has been made to survey the nature and extent of the problem of mental disease in Canada. From annual statistical reports and the semi-annual surveys of the National Committee for Mental Hygiene (Canada), the following facts have been demonstrated:

1. The number of patients in residence in mental hospitals is increasing each year. This is not necessarily evidence to support the contention that mental disease is on the increase.

2. Overcrowding of mental hospitals, together with inadequate appropriation for the medical staffs, are the two chief difficulties facing the provincial Departments of Health.

3. Although mental illness and disability is costing the country many millions each year, relatively little is being done to encourage research in this field. Much of the investigative work that is being carried on is financed by foundations in the United States.

4. In spite of difficulties in securing adequate appropriations, there have been many significant developments in provincial mental hygiene programs. In many provinces it is encouraging to report definite planning for constructive programs, which it is hoped will be carried out in the immediate future.

REFERENCES

1. Dayton, Neil A.: New Facts on Mental Disorders. Charles C. Thomas, Baltimore, 1940 (p. 419).
2. Fifth Annual Report of Mental Institutions. Dominion Bureau of Statistics, Ottawa, 1936 (p. 7).
3. Buck, C. A.: Rehabilitation of the Mentally Ill. Canad. Pub. Health J., 1940, **31**: 62.
4. Sixth Annual Report of Mental Institutions, 1937. Dominion Bureau of Statistics, Ottawa, 1939 (p. 52).
5. Reed, G. E., and Dancey, T. E.: Insulin Treatment of Dementia Praecox, Internat. Clinics, 1938, **2**: 48.
6. Johnson, Edward: Insulin Shock Treatment in Schizophrenia. Canad. M. A. J., 1939, **41**: 64.
7. Easton, N. L.: The Insulin Shock Treatment of Schizophrenia. Canad. M. A. J., 1938, **39**: 229.
8. Cummins, J. A.: The Treatment of Mental Illnesses with Metrazol. Canad. M. A. J., 1940, **42**: 39.
9. MacKay, Murray: Insulin Therapy in Dementia Praecox. Nova Scotia. Med. Bull., 1938, **17**: 221.
10. Menzies, E. C.: The Treatment of Schizophrenia by Hypoglycaemia. Canad. M. A. J., 1940, **42**: 320.
11. Reed, G. E., and Dancey, T. E.: Compression Fractures of the Vertebral Bodies following Induced and "Idiopathic" Convulsions. Canad. M. A. J., 1940, **42**: 38.
12. MacLean, R. R., and Kibblewhite, E. J.: Sexual Sterilization in Alberta, 1929-37. Canad. Pub. Health J., 1937, **28**: 587.
13. Griffin, J. D. M., Laycock, S. R., and Line, W.: Mental Hygiene—A Manual for Teachers. (Publication date to be announced.)
14. Mira, E.: Psychiatric Experience in the Spanish War. Brit. M. J., 1939, June 17, p. 4093.

Development of a Health Program in the Secondary School

D. V. CURREY, M.D.
Medical Officer of Health
and
A. G. NICOLLE, P.H.N., B.Sc.
Supervisor of Public Health Nursing
Department of Public Health, St. Catharines, Ontario

UNTIL very lately little attention has been given to the health of our secondary-school pupils. While most places have a good elementary-school health program, the attitude has been that once a pupil enters high school he should be able to look after his own health. This reasoning is unsound, because the health problems of the adolescent are quite different from those of the younger group.

Pupils do not enter our high schools until they have been prepared academically, so any secondary-school health program presupposes that the pupil has had adequate health supervision in the elementary school. This may also be wrong, because some pupils come to our high schools from a surrounding rural area which has had no school health supervision.

Of what use is it to give a pupil an excellent secondary-school education, only to find when he graduates that he has some physical or mental handicap that will prevent him from ever taking his proper place in the community? It has been well said that "School health education ought to regard the maintenance and promotion of health for all pupils as its primary function, and the correction of defects and provision of special care for children with defects as an essential activity which, however, does not in itself constitute a complete health program."

We realize that most health handicaps are either preventable, or at least can be alleviated if we find them early. In regard to our secondary schools little attempt has been made in the past to make sure the pupils leave the school in good health. If it is a matter of cost, we are very short-sighted; because we must realize that we are dealing with the mental and physical health of the next generation."

What is health? Health means a well developed body, as well as a healthy mind and outlook. It also involves a responsibility in regard to our own health and that of others. This implies health attitudes and practices based on authentic health knowledge. Any school health program must use all the professional contributions to health available in the community to reach this goal.

**Presented at the annual convention of the Ontario Educational Association (School Health Section), Toronto, March 28, 1940, and subsequently revised.*

It is impossible to build up a good health program in our secondary schools unless the student has had good primary school health supervision, from which he not only has learned good health habits, but has also acquired some health knowledge. The elementary-school health program itself depends on the pre-school health supervision. Actually, if we are to have a good secondary-school health program, a start must be made in the pre-natal period, by making sure in every municipality that proper health supervision is being given every expectant mother, not only for her physical well-being, but also in regard to her outlook on life. Education of our parents in the home, conference, or clinic is essential in any health program for the child.

Pre-School Health

In the pre-school period, where adequate health supervision has been given, the child will have had a complete physical examination by a physician, and at least two examinations of his teeth by a dentist, with the correction of defects. He will also have been immunized against such preventable illnesses as smallpox, diphtheria, whooping cough and perhaps scarlet fever. His parents will have received guidance in regard to diet to prevent nutritional diseases, and in his management and habit formation to prevent emotional disturbances. The better the health supervision of infants and children, the better will be their adjustment to school life, and the better the foundation for their future.

Before entering school for the first time, the child should again have complete physical and dental examinations. If for any reason these cannot be made by the family physician and dentist, some arrangement should be made by the municipality. The finding of these children through the district health nurse is one of the values of a generalized public health program.

Elementary School Health

The elementary-school health program can only go as far as the home will allow: attitudes and health practices in the home may be built by family health-teaching, especially where the same nurse is in close contact with both home and school. When a pupil commences school he comes under the supervision of the school medical, nursing, and dental services. In the elementary school he should receive at least two complete physical examinations by the school physician, preferably in the first and seventh grades; he will have at least four dental examinations. Defects are reported to the parent so that correction may be made. The school nurse will check the vision and hearing at least four times, notifying the parent of any abnormality so that a specialist may examine the child. If the pre-school immunizations have been missed, these will be done. In municipalities where there is no physician in the school, the medical officer of health will be responsible for immunizations. During his school life, besides observing physical conditions, the teacher should be aware of behaviour problems such as truancy, untruthfulness, or seclusiveness. These will be reported to the nurse, who, through the family physician, will take steps to have the child examined by a psychologist.

Situations of this kind offer for the alert nurse splendid opportunities for family health teaching.

Health History

The obvious bridge, then, between the health teaching in elementary and secondary schools is the strength of the health program in the early years, both in home and school. The record of the findings, results of corrections, and other health work is a basis which the high school can use for beginning health guidance of the 'teen age student. In Ontario the A.P.R. card is the only record the elementary school has available for the secondary; to be of real use, school authorities and nurses must realize the value of pertinent recording on these cards of any important incident during school life; this is especially true in regard to such diseases as rheumatic fever, or important symptoms as dyspnoea, etc. What record is there, however, in regard to behaviour or emotional difficulties which, in the future, may be much more important to the pupil than a physical defect? Although the A.P.R. card is valuable as previous history, the secondary school needs its own record card which will meet the needs of this older age-group. Attaching the A.P.R. card to that of the secondary school provides, without duplication, a continuous health history of the pupil from the kindergarten until he leaves school.

Secondary School Health Needs

If we have built the nucleus of an efficient elementary school health program, we may now consider the special needs in the secondary school. As our primary-school program is built on a different level than that of the pre-school period in order to meet the needs of an older age group, so the secondary-school health program must start on the intelligence and interest level of the 'teen age student whose needs and problems we are to meet. Generally speaking, the years twelve to eighteen should be the healthiest of a pupil's life. This can be attained only by healthful conditions in home and school, through health supervision and health knowledge.

In considering any secondary-school health program consideration must be given to the type of community, the educational aims of the school, the ages of the students and their growth needs, the health hazards peculiar to this group, and the means by which they can be interested to take responsibility for their own health. While only about 7 per cent. of the pupils go on to the universities, still the college health program will be influenced by the health work in secondary schools(2). The vast majority of the pupils will go into the industrial world where health is an important factor in finding a job and in keeping one. Many will become parents. Surely no better opportunity exists than to use this period of receptivity and interest to start pre-parent education.

One of the most important needs of the adolescent is an understanding of his physical and emotional changes, for at this time there are tremendous changes in his body as well as in his outlook. It is the period of most rapid physical and mental growth; of muscular development as well as circulatory

and glandular changes. Emotionally he may be confused since, because of these rapid changes, he finds himself in what seems to him to be a hostile world of fashions, customs, and moral conduct, which he had nothing to do with making(3). It is not to be wondered that so many of these pupils break down physically or mentally, but the wonder is that so many survive the ordeal with the little health supervision and health knowledge they receive. In our program we have not only considered health needs and supervision, but have also provided an understanding friend and an open-minded listener.

Not being educationalists, and perhaps "rushing in where angels fear to tread," it seems to us that it might be better if our pupils spent one more year in high school and received some real health training throughout their course so that when they leave school they will know how to live.

Health Hazards of Adolescence

The health program of the secondary school presents an unequalled opportunity for prevention of many of the health hazards which show up during adolescence.

Tuberculosis. The incidence of tuberculosis is, as a rule, high among secondary school pupils. The health program of the school can play an important part in educating the community to the value of the tuberculin skin test, for a student will often consent to a new procedure with his own group. It would seem that this test is imperative during the first year of high school life, and can only be considered efficient in the school if every pupil receives it, as well as every member of the school staff and employees. In 1938 when the skin test was first made available in our secondary school, all teachers and employees were given the test. At that time, 1,265 pupils were registered and 1,064 (84 per cent.) took the test. Previously 36 others had been tested. There were 169 positive (15 per cent.); these were immediately given an X-ray examination. We had under observation 7 minimal cases of tuberculosis and 2 more cases were found. In 1940 new pupils and those who had been previously missed were offered the test; of these 792 pupils, 96 (12.1 per cent.) were positive, and 1 active case was found which was immediately admitted to the sanatorium for treatment. Our routine is to test about 100 pupils on Tuesday, read the tests on Thursday, and have all positives given an X-ray examination at the sanatorium on Saturday morning. Early X-ray prevents apprehension. As the student should be prepared for the test, so should the result be interpreted to him as an educational procedure, and to allay any fear.

Heart Disorders. Most of the troubles referred to the heart in the adolescent period are not as a rule organic, that is, the heart itself is not damaged; but many functional disorders occur such as palpitation or irregular rhythm; it may be that some types of the latter are caused by the difference in growth of the heart with the size of the body. Most functional disorders are of nervous origin, often being due to fatigue, overwork, indiscretions of diet, or the use of tobacco in which so many of our high school pupils seem to indulge. If the cause can be removed, these functional troubles soon disappear. In

our secondary school work we take these factors into consideration and try to have them corrected as soon as possible.

A heart examination which includes an exercise test as well as blood pressure reading is given to the student taking part in competitive sport. At this time the urine is also tested. Any deviation from the normal which would affect the type of exercise to be given is discussed with the directors of physical education.

Organic heart disease occurs in about 1 per cent. of high school pupils, usually the end result of previous infection by communicable diseases such as scarlet fever, diphtheria, typhoid, or, most common of all, rheumatic fever. These pupils need extra care, but even with a damaged heart they may by taking extra rest have a very useful life. The parent, the principal, teachers, and physical director should be notified in regard to such a defect. A home visit by the nurse will likely result not only in helping the patient but in a real opportunity for family health teaching.

Hearing. Far too many students are having difficulty in secondary school work because of defective hearing. In the adolescent, the use of the audiometer is necessary in order to determine the degree of deafness. This apparatus has proved its value, but few are being used in our high schools.

Students with defective hearing are encouraged through the parents to consult a specialist to determine if treatment would alleviate the condition. Health guidance of the partially deaf student includes special consideration in regard to seating arrangement in the class; encouragement to continue normal contacts with his own age group; and the relation of rest and nutrition, to the prevention of further infections.

Vision. About the second year of high school, many pupils seem to have increased difficulty in regard to vision. This may be due to the fact that the eyes change considerably during adolescence. Sometimes it is due to the increased hours a pupil must work under artificial light, for most of us realize that many homes and schools are poorly lighted for the amount of studying the high school pupil has to do. Consideration is also given to the fact that the student's physical condition may temporarily impair vision, such as recent illnesses or malnutrition. The Snellen chart may not be sufficient to determine these visual defects, but with the Keystone visual apparatus it is not difficult to find loss of visual acuity, imbalance, or imperfect fusion. Through the students, parents are advised to consult a specialist who will prescribe glasses if necessary. Service clubs often provide these if the family cannot.

Adjustment to Environment. Entering high school itself provides certain problems for the student who must adjust himself to a new environment with a different system; the security of the smaller school is gone, his responsibilities have increased even to keeping his own schedule with several instead of one teacher. There is a heavier program of study with considerably more homework. Sports are more strenuous, and group activities more numerous. We the health specialists stress the importance of rest, yet the average high school student gets less opportunity for rest than any other group in the community. Health guidance for the first-year student in adjusting to this change of program will often prevent discouragement, often lack of progress in his work.

Accidents. During adolescence, pupils in our secondary school must be taught about prevention of accidents in the home, on the street, and in the factory, as in a very few years these pupils will need this information. Here again, the classroom teacher and the physical directors are of great assistance. Realizing that very soon most of these pupils will be driving motor cars, it would seem only reasonable that we should teach them the rules of safe driving. An excellent idea would be to have some definite way of making sure that before they left high school they had their driver's certificate. If this were done, there is no doubt that the next generation of motorists would be much better and safer drivers than those of to-day. Only by education will our motor fatalities be lessened. Our schools have already made a start in this direction by devoting one afternoon to the showing of safety motion pictures provided by the Ontario Safety League.

Various Types of Health Service

There appears to be a great difference of opinion in Canada regarding an adequate school health program. Most cities have no health work in their high schools; some carry along in the high school much as they do in elementary schools. Other cities again consider health only from the angle of physical education, where emphasis is placed on sport. A few are reported as experimenting in various ways, but little attention so far seems to have been given to the mental and emotional needs of these students through health guidance with health education as its goal. It remains to be seen whether the confusion in thought is due to the lack of leadership and research, or that the field itself is so rich in content, so complex in its interrelationships, that much time will be needed to unravel its intricacies(4). To the physician, nurse, and teacher interested in health education it presents a stimulating new field of endeavour worthy of our best efforts.

Health Examination

A careful health examination forms the background for the secondary-school health program. However, with the large groups in our high schools only a superficial examination, of little value to the student, is usually given. "The rapid cursory medical inspection which prevails in many high schools fails both in rendering adequate diagnostic services to the pupils and in developing satisfactory attitudes and knowledge as to the medical services they should rightfully expect from a physician"(4). Because we are dealing with a group who like to take responsibility, we feel this examination should be done in his office by the family physician. The examination form should be provided by the school, and should be returned there when completed. The health examination covers every part of the body including vision, hearing, heart, blood pressure, chest, urinalysis and tuberculin skin test. In St. Catharines the practising physicians have agreed to do such examinations at a nominal charge. The health of the pupil really belongs with the family physician, to whom all treatments are referred.

Because of the great number of pupils in the average high school, it is necessary to consider the family physician as part of the health scheme, so

that the school physician will have sufficient time for health conferences with the students. Because of this, except for those engaged in strenuous sports, those chosen by the teaching staff for special examination, or in emergencies, we have not found it feasible to provide in the school a routine physical examination. The pupil should, however, be encouraged to consider his annual health examination as very necessary; and it is hoped by realizing its importance he will continue to have it done when he leaves school.

Dental Service

No secondary-school health program would be complete without a dental service. Our program provides for an annual dental survey of all pupils, who are advised of any unhealthy oral condition. The student is then responsible for securing treatment from the family dentist. For those unable to afford treatment, a weekly clinic has been arranged outside of the school. The educational value is the stressing of the examination, the use of the family dentist, and the responsibility of the student for securing treatment.

Health Room

With the new plan the health room has become the hub of the health program in our school; its location and equipment as a conference rather than a medical room was important. The room is attractive as well as useful. The teachers and students showed their interest by making fixtures, record files, and attractive hangings. To this centre come students with any health problem—physical, emotional, or environmental difficulty, either of their own accord or referred by the staff. Because of the rotary plan used in the school, an appointment system from the teachers, as well as a method of reporting student health conferences to them, has been developed.

The Principal

On the principal depends to a very great extent the success of our program. Without his active sympathy and co-operation, no health scheme could succeed. All unusual situations are reported to him as soon as possible. New plans are discussed with him in order to keep him in touch with developments within the health service. As a member of the health committee the principal is kept in touch with the entire health program.

Health in Class Room

The class room teachers and directors of physical education are an integral part of the program, they have an opportunity of teaching through their own specialty some aspect of health. Then they have, because of their close contact, a splendid opportunity of observing in the pupils any deviation from the normal. They can contribute to a healthful school environment by their example and their own health practices. Minor accidents are cared for by the teacher, as small first-aid kits are available for each room. The more serious accidents are looked after by the physical director of boys or girls when the physician or the nurse is not in the building, and the chief medical officer and school physician are on call for emergencies. The pupil is then referred to his family physician for necessary treatment.

Health Committee

The health program is co-ordinated by a health committee composed of the principal, the heads of departments and the health specialists. From time to time this committee personnel is changed in order that all teachers may have the opportunity of serving on the committee, thus keeping them in touch with the progress in the integration of health throughout the school.

Health Advisers

All public health in St. Catharines is under the direction of the Department of Health, with the Board of Education and Board of Health jointly responsible for the program. The health personnel for the secondary school was chosen with extreme care, for special preparation is necessary for those who would do high school work. The principles of teaching are just as important for the physician and nurse as for the teachers. The physician must have special knowledge of the problems of the 'teen age group as well as their health needs. He must be sympathetic, understanding and command the respect of the students, if we are to expect the adolescent to seek advice. The nurse health adviser must understand the high school pupils, their interests, their special problems, and their home environment. She needs a broad background of public health nursing, health and teaching, plus experience, and a working knowledge of modern educational technique. Her academic training will then be on the level of the teachers with whom she works.

Our physician is at the school one morning, and the nurse health adviser is there two mornings each week. Although the program has been organized for only a short time, it has developed so rapidly that we must consider more time for the secondary school if we are to continue the development of a service which is so important to the welfare of our future citizens, and arrange for the nurse health adviser to be on duty part of every school day.

Health Conference

Based on the new philosophy in education and the needs and hazards involved in health guidance of the 'teen age students, the health service in St. Catharines Collegiate Institute and Vocational School was organized in January, 1939. This school now has a registration of nearly 1,400 students and a staff of 46 teachers. It serves the city of St. Catharines and part of Lincoln County. Planned as an integral part of the developing health program of the school, only a consultative health service seemed to meet the needs of this age group for health guidance, through the health conference.

1. It provides for pupils in a conference with an understanding, experienced person, an opportunity of expressing themselves on an adult level.
2. It is an opportunity to use their interest in themselves, for health teaching based on their own problems. For instance, using the school library for reference if the problem is one of nutrition.
3. It uses their desire to achieve independence by giving them increasing responsibility for their own health adjustment; even to securing a physical examination from the family physician, through their parents.

4. The conference usually discloses home or school problems underlying emotional conditions, or lack of progress in school.

5. It provides a common ground on which principal, teacher, and adviser meet for an understanding of the individual student. Each teacher then contributes to the adjustment of boy or girl and this awareness on the teacher's part of the problems of the school group, which is representative of their own community, will eventually provide unlimited material for health teaching.

Recently a teacher of a first-year student in his second semester, observed the boy's rapid growth, fatigue and a slowing-up of his work, but before she was able to make an appointment with the health adviser, the boy collapsed at his desk. The school physician was called, the student was given attention, then removed to his home apparently in a serious condition. A home visit by the nurse shortly afterwards disclosed several reasons for his condition. The boy said he had found the large school system confusing after a small elementary school, but "thought he'd get used to it". Four times a day he had the long walk to school, and after school sold newspapers. Inquiry into the family budget revealed that he and his twin brother, reaching the age of 16 a few months previously, had been taken off the mothers' allowance. The mother, a good manager, tried to make the allowance for herself and another collegiate child, her daughter, cover expenses for the family of four. The fact that these twin boys had been delicate, premature twins no doubt increased the possibility of malnutrition. The mother was persuaded to call their family physician. Arrangements were made by the nurse health adviser, after a conference with the doctor, to provide free chest X-ray examination, medication and milk through the health department and service clubs. Bob agreed to lengthen his night's rest by one or two hours and to rest at noon. The welfare department was contacted for an allowance for the boys, and a conference with the principal and teachers gained their co-operation and interest in the boy's problem. Bob is already beginning to show the result of improved nutrition and rest. In every procedure he is taking responsibility, and learning that healthful living and achievement cannot be separated.

The consultative type of health service is as definitely a teaching department of the school as the science or household arts departments. It closely follows the new philosophy of education, teaching in a life situation, and making all contacts with pupils of educational value. The conference with the health advisers makes it possible to discuss the scientific facts of nutrition, rest, or emotional difficulties, using the 'teen age boy and girl's interest in scientific findings, often with amazing success. Health facts made interesting and important to them seldom fail to secure their co-operation.

Healthful living, then, may well be the core of the whole school program; in no other way can we make sure our young people use, to the fullest extent, any abilities which they possess, and which we in the secondary school are trying to develop.

REFERENCES

(1) Turner, C. E.: Present Trends in Health Education, Public Health Nursing, 1937, p. 499.
(2) Extract, Public Health Review, Ann Arbor, Michigan.
(3) Sadler, William S., and Sadler, Lena: Piloting Modern Youth. Funk and Wagnalls Company, New York, 1931, p. 3.
(4) Nyswander, Dorothy B.: Problems in Secondary School Education. Health and Physical Education, December 1933, p. 601.

Prevention and Control of Scarlet Fever

E. S. BOLTON, M.D., D.P.H.
Medical Officer, Brandon Health Unit, Brandon, Manitoba

UNTIL a few years ago, all that could be done toward the control of scarlet was to quarantine the patient for a period of at least four weeks and until all discharges had ceased, isolate all contacts for at least seven days, and disinfect all infected rooms and articles.

Any possible advantages in such practices have been limited by incomplete reporting. With the advent of the public health nurse, reporting has improved but many cases are still unrecognized due to the mildness of the disease during the past few years. It is generally agreed also that a great many cases of sore throat are due to scarlet fever infection but these are unrecognized as such, since sore throat is the only symptom. These conditions all tend to make control of the disease difficult even with the best co-operation.

In my opinion, schools should be kept open during an epidemic and provision made for a public health nurse to visit all absentee pupils. By this means most of the suspicious or serious cases will be found and reported. By closing the schools supervision and control of the children are lost.

In spite of improvements in diagnosis, better reporting, the visiting of absentee pupils, and rigid enforcement of quarantine and disinfection, we have not achieved the desired control of this disease.

No real progress was made until Doctors Gladys and George Dick demonstrated in 1921 that the causative agent was a haemolytic streptococcus, and later reported that susceptible persons could be identified by means of the Dick test. Attempts had been made by earlier workers to develop immunity by using vaccines made from strains of streptococci obtained from throat cultures of cases. No progress in immunization had been made, however, until after the Dick test was introduced. The Dick test makes it possible to distinguish between persons who are immune and those who are non-immune. It aids materially in the application of control measures and makes it possible to permit immune contacts to continue to attend school, provided certain regulations are observed.

Scarlet fever antitoxin for use in treatment and prophylaxis was also made available through the findings of the Dicks. The giving of antitoxin to patients early in the course of the disease lessens the incidence of severe complications, while the prophylactic dose confers temporary protection to susceptible persons.

Observations have been made that active immunization may be commenced at the same time as a prophylactic dose of scarlet fever antitoxin is administered, thus permitting no time to be lost in the development of immunity. Experience has shown that the temporary protection afforded by scarlet fever antitoxin is

lost in the course of two weeks and the individual becomes again susceptible. If the patient on release from isolation harbours the causative agent, the susceptible person may be exposed and contract the disease. For this reason, institution of active immunization is highly desirable. It is stated that the first dose of scarlet fever toxin might best be given shortly before the administration of the prophylactic dose of scarlet fever antitoxin. Under these circumstances, the immunizing value of the first dose of toxin is not lost by the injection of scarlet fever antitoxin. Subsequent doses of scarlet fever toxin would be administered, as is usual, at weekly intervals.

Active immunization against scarlet fever is accomplished by giving a series of diluted doses of scarlet fever toxin. The first record of which I am aware, of the immunization of school children against scarlet fever in Canada was a report published by Berry (1) in this journal. In 1926, Dr. T. W. G. McKay, Medical Health Officer of Oshawa, Ontario, commenced a campaign for the immunization of school children against this disease. The annual morbidity rate had varied in that municipality from 3.4 to 6.8 per 1,000 population, but after immunization it gradually declined until in 1935 the rate was 0.9 per 1,000. Since that time immunization against scarlet fever has been undertaken among both school and preschool children in a large number of communities with good results.

EXPERIENCE IN BRANDON

In the fall of 1935, from September 30th to December 15th, 73 cases of scarlet fever developed in Brandon. During the week ending October 27th, 18 cases were reported, and, in an attempt to control the disease, it was decided to give scarlet fever toxin to both school and preschool children. Before this program was commenced, the signed consent of each parent or guardian was obtained. The product used was the scarlet fever toxin prepared by the Connaught Laboratories, University of Toronto. The first injection was made during the week of November 4th to 10th, and the fifth dose given the week of December 2nd to 8th. One thousand one hundred and nineteen school children were given five doses, and 5,595 doses were administered in all. A few weeks after the administration of the first dose, November 4th, the cases were markedly reduced, and by the middle of December the epidemic was at an end.

A preliminary Dick test was not done but all the children who had received five doses of scarlet fever toxin during January were Dick-tested and 340 or 31 per cent. were found to be Dick-positive. These 340 Dick-positive children were given another injection of 10,000 skin-test doses, i.e. another cc. of toxin of the last dose known as "E".

Some of the records were lost but complete records were available for 440 of the 1,119. Of this group, 152 (35 per cent.) were Dick-positive after five doses of toxin. Of these, 141 were given a further dose of strength "E" and again Dick-tested. Fifty-two (37 per cent.) of these were still positive after the sixth dose. Thus about 11 per cent. of the whole group remained Dick-positive after the administration of six doses.

We have used six doses of scarlet fever toxin in our immunization program since that time. A few reactions such as fever, headache, and vomiting have resulted but no serious reaction has been observed in over 12,000 doses. Many children complain of redness and soreness of the arm but these disturbances usually disappear in twenty hours. For the past three years, diphtheria toxoid and scarlet fever toxin have been given together and I have found this method to be very satisfactory. In giving the scarlet fever toxin and diphtheria toxoid, I have used separate syringes but the same needle, not withdrawing the needle between the injections. For convenience, I have used a 10-cc. syringe for scarlet fever toxin and a 5-cc syringe for diphtheria toxoid. Particular care is exercised to avoid contaminating the needle. A freshly sterilized needle is used for each child. The method avoids making two inoculations. Diphtheria toxoid is administered with the first dose of scarlet fever toxin; and as six doses of scarlet fever toxin are used, the three doses of diphtheria toxoid can be properly spaced. The children are immunized with the least amount of discomfort and much more expeditiously than if the injections were given at different times. The time saved is important, especially when doing immunization work in rural districts.

THE EFFECTIVENESS OF IMMUNIZATION BY SCARLET FEVER TOXIN

In 1936 Berry (1) reported that the morbidity rate was greatly reduced by the giving of scarlet fever toxin to school children in Oshawa. He also estimated that about 30 per cent. of persons remained Dick-positive after five doses and recommended the giving of six doses.

From January 1st to March 15th, 1939, 122 cases of scarlet fever occurred in Brandon. In the preschool age-group (1 to 6 years) 15 cases developed, of which none had been immunized. In the age-group 7 to 12 years, there were 36 cases, 7 of which had been immunized. In the age-group 13 to 18 years, 39 cases developed, 5 of which had been immunized. In the age-group 19 and over, 32 cases occurred, none of which had been immunized. The cases were all mild and there were no deaths.

In 1938, Fraser (2), in a survey of 2,359 school children in Peterborough, Ontario, in the age-group 5 to 16 years, found 682 or 29 per cent. Dick-negative. Using these findings, that approximately 30 per cent. of children of school age are Dick-negative, the following evaluation was made. There were, in 1939, 3,002 children attending the public schools in Brandon. Of this number, 50 per cent. or 1,501 had received scarlet fever toxin. Of the remaining 1,501, taking Fraser's findings, 30 per cent. or 450 would be Dick-negative, giving 1,951 who were either immune or had received scarlet fever toxin and 1,051 who had had no immunization (and presumably no immunity). A total of 69 school children contracted scarlet fever, 12 of whom were in the "protected" and Dick-negative group and 57 in the "non-immune" group. Thus, 12, or 17 per cent. of the cases developed in 1,951 children either protected or Dick-negative, while 57, or 83 per cent., of the cases developed in the smaller non-protected group of 1,051 children. This gives a case rate of 6 per 1,000 in the "protected" group and 54 per 1,000,

or nine times as great, in the "non-protected" group. Had the case rate of non-immunized children applied to the "protected" group, we should have expected 108 cases, compared with the 12 actually reported.

It seems reasonable to assume that immunization prevented the occurrence of 96 cases of scarlet fever in the group of 1,951 protected children. A more strict comparison between the morbidity in "protected" and "non-protected" children would be effected by relating the cases in the 1,051 in each category who were presumably Dick-positive at the outset. Assuming that all the cases occurred within these two groups, the case rates would be 11.4 and 54.2 per 1,000 —a ratio of one to five. This and other comparisons assume, of course, equal opportunities for infection in the two groups.

Little (3) reported in this journal recently his findings in regard to scarlet fever immunization in Edmonton, stating:

"On February 28, 1939, our records showed 447 of the 15,045 school children as having had scarlet fever, these cases being distributed as follows:

	No.	Cases	Rate per 1,000
Immunized	6,982	29	4.1
Non-immunized	8,063	418	51.8

The case rate of the non-immunized was more than twelve times that of the immunized."

On the basis of our experience, I recommend strongly that scarlet fever toxin should be given to all children between the ages of 1 to 16 who have not had scarlet fever. A preliminary Dick test may be dispensed with since nearly all children in this age-group are Dick-positive. Scarlet fever toxin can be given in conjunction with diphtheria toxoid, and one can assure the parents that the reactions resulting from the giving of scarlet fever toxin are as a rule mild and even the few severe reactions are not serious. Experience is such as to indicate definitely that the giving of scarlet fever toxin as outlined will reduce the scarlet fever morbidity rate in the community. The cases which have developed among those who have received immunization have been of a very mild character and free from serious complications.

REFERENCES

1. Berry, Grant: Scarlet Fever Immunization in Oshawa, Ontario. *Canad. Pub. Health J.*, 1936, 27:196.
2. Fraser, G. M.: Scarlet Fever Immunization. *Ibid.*, 1938, *29*:545
3. Little, G. M.: Scarlet Fever Immunization in Edmonton, Alberta. *Ibid.*, 1939, *30*:488.

The Convulsive Child in the Community*

W. W. BARRACLOUGH, M.D., M.R.C.P. Lond.
Hospital for Sick Children, Toronto

RECURRENT fits and attacks of unconsciousness have for many centuries been thought in themselves to constitute a disease. As increasing knowledge has demonstrated that pathological conditions of various types may cause similar manifestations, this conception has changed. The occurrence of attacks of unconsciousness, either of momentary duration as in the case of petit mal attacks, or longer and associated with convulsing movements as in a major convulsion, is now looked upon as constituting a group of symptoms and signs, a symptom complex produced by one of many varying causes. This newer conception of convulsions and their associated phenomena has given much needed stimulus to careful search for the possible underlying factors.

Convulsions occur as a relatively common symptom in children. In the early months and years of life, the nervous system is relatively unstable. It is probably not completely developed until three or four years of age. Although we have no scientific support for this view, we do know that the pyramidal tract, that nerve tract which carries impulses to the muscles in voluntary movement, does not receive its protective covering until twelve to eighteen months of age, and in all probability many association tracts develop at an even later date. During this period of progressive development and relative instability, the child may respond to some simple poisoning or infection with a convulsion, and a convulsion under these circumstances probably means no more than a chill at the commencement of many illnesses.

When the physician is consulted by the parents of a child having convulsions, this question is almost invariably asked: "Are the convulsions epileptic?"

Epilepsy is a term which calls to mind a very definite picture: recurring convulsions, associated with increasing mental enfeeblement, and an ultimate state of incapacity requiring constant supervision, often in an institution. Many cases of epilepsy do commence in childhood, but in the absence of obvious signs of feeblemindedness or any evidence of gross brain damage, there is no means at our disposal to differentiate between a convulsion which may be of relatively benign origin and a convulsion which may be the first manifestation of a developing epilepsy. It is wise therefore, in the majority of cases, to withhold the diagnosis of epilepsy until the child is eight or ten years of age. This rule of course is purely empirical and is suggested merely in an endeavour to foster investiga-

**Presented before the Mental Hygiene Section at the twenty-eighth annual meeting of the Canadian Public Health Association, Toronto, June 1939.*

tion and to postpone, as long as possible, an attitude of hopelessness which the diagnosis of epilepsy is bound to introduce.

THE CONVULSION AND ITS MANAGEMENT

A convulsion is always a distressing sight. With often little or no warning, the child may cry out, then fall. The muscles of the body tighten in irregular progression into a state of tonic contraction. The fists close, the legs extend, the muscles become tense and rigid, the tension advancing in a fairly deliberate manner. The face is distorted and becomes dusky in colour and livid. Alternations in the tension produce stiff slow contortions and, with progressive shivers, a period of convulsive movement follows. Relaxation and contraction take place in rapid alternation. The chest heaves, the body is jerked about, and the jaw opens and shuts. As Hughlings Jackson has expressed it, "the individual becomes a clotted mass of motion". After a period of a few seconds the patient, still unconscious, ceases to jerk, usually abruptly, and a deep sleep lasting for a few minutes to several hours terminates a most gruesome performance. There is complete loss of memory for the period of the attack. Often following the attack, there is some confusion, odd behaviour and occasionally irritability. Such is a description of a characteristic major convulsion. It is a dramatic experience, and arouses in the onlooker a feeling of helplessness, and often of fear.

If the sequence of events in any convulsion were better understood, much needless treatment would be eliminated. It should be remembered that the convulsion itself is of relatively short duration, that it will run its course and terminate in spite of any assistance given.

The best management of the actual convulsion "is to do nothing." Physical restraint serves no useful purpose. In one large epileptic colony, where many thousands of convulsions are observed annually, the routine procedure in handling a convulsion is to permit the patient to remain where he falls, the head only being supported to prevent it from being injured by striking some object or the ground. When the convulsion has ceased, the patient is permitted to remain in this position during the period of sleep, unless this period of sleep is too prolonged. In this connection, it should be borne in mind that the sleep which usually follows the convulsion is beneficial to the patient. Such efforts as are directed to rouse the patient from this sleep will intensify symptoms which may follow this attack. Our desire to rouse the patient from sleep following a convulsion may be a relic of tradition, for it was believed at one time that a convulsion and the subsequent period of unconsciousness was due to the fact that the soul of the individual had departed out of the body, and every effort was made to guide this soul back into the body. Sleep, at this stage, however, if cut short will invariably be followed by increased headache and other distressing symptoms.

INTELLECTUAL LEVEL

Many children subject to convulsions present no evidence of impaired intellect. Memory, reasoning and judgment appear to be as good as in normal

children, the periodic loss of consciousness being the only abnormality. In fact, a small percentage will show superior intelligence.

Although a few individuals possess superior intelligence and many show no evidence of mental impairment, for the most part psychometric examinations of children suffering from idiopathic convulsions indicate that the level of average intelligence is lower than in control groups. Kanner found that of a series of patients examined at the Harriet Lane Children's Hospital, 87 per cent. showed intelligence quotients of 100 or less and of these 37 per cent. came in the group of 80-100, and 50 per cent. below 80.

Impairment of intellectual faculties seems to depend upon the frequency of the seizures. The more frequent the attacks, the greater the mental retardation. The intellectual impairment is usually slowly progressive during the period when the individual is subject to convulsions. If, however, the convulsions cease spontaneously, or decrease in response to treatment, the mental impairment ceases to progress or there may be actual recovery of intellectual ability. Indeed, one can call to mind children who appeared dull, stupid and confused on first consultation but who improved on suitable treatment. Their seizures controlled, they have become bright and more alert individuals capable of assuming school work approaching that of the grade appropriate to their chronological age.

In those cases of progressive intellectual defect, there is a slowing of mental activity. Hahn, carrying out association experiments on a group of young epileptics and repeating the tests from time to time, found that there was a definite and gradual prolongation of the reaction time, in the responses. This slowing deserves consideration in giving intelligence tests which require time restrictions. It is of interest to know whether the child can carry out the requirements within the specified time, but it is also important to know whether they can be carried out at all.

PERSONALITY DEVELOPMENT

Much has been written about the personality make-up of the patient having convulsions. They have been variously described as dull, quarrelsome, egocentric with limited range of interest and possessing a limited stock of information. They have been described as lacking productivity and spontaneity and their thinking has been described as monotonous, concerning itself with simplest activity.

In discussing the personality development of these patients, care must be taken not to place too much importance on the influence of the underlying morbid process or on innate tendencies. Individuals suffering from convulsions do probably possess a type of constitution or structural make-up which permits them to react with a convulsion to a stimulus of such a degree as would not affect an ordinary person, but therein common factors of make-up would appear to cease.

The occurrence of a single convulsion or a short series of convulsions only rarely modifies personality. Where convulsions recur, both the patient and the family are apt to react to the illness in such a way as to modify personality

development. The feebleminded child does not usually worry about the seizures. If they have begun early enough, they are simply taken as passively and in as matter-of-fact a way as any natural phenomenon is accepted, quite without concern or curiosity.

If, however, the attacks begin at a time when the child is able to reason and to wonder, and if the patient is intelligent enough to take issue with the experiences of life, the realization of being subject to seizures may have a decided effect upon his attitudes and preoccupations. The occurrence of a convulsion, often without warning, places him in an unusual and often embarrassing position at home and among his playmates. He may find himself, through no fault of his own, thrown into the spotlight, the centre of curious gaze. He may learn to fear their recurrence in public or while at school. The irregularity of the seizures may arouse in him a sense of apprehension associated with any undertaking, lest a convulsion occur. Frequent attacks may necessitate unforeseen absences from school or, on the other hand, those in authority may bar attendance at school when a convulsion is found to be a disturbing distraction in the school room, or it is feared that injury may occur during the attack for which they might be held responsible.

The child broods over the nature of his condition. He may think of himself as different from other children, and withdraw to himself. He resents the restrictions imposed by physicians in treatment, or parents endeavouring to protect. All the while, the patient is exposed to varying environmental attitudes which cannot but leave their mark on a developing child.

The family itself, ashamed of the fact that one of its members has convulsions, will shield the child from friends and neighbours and, fearing that the condition may be epilepsy, adopt an attitude of solicitation far in excess of the needs of the case. Activities are restricted. Games are forbidden, for it is felt that a seizure might occur and injury follow. Parents, naturally worried over the condition, often dispense with the usual methods of training, giving in to all whims and fancies, spoiling the child in every conceivable way. This patient may further be submitted to many sorts of procedures, fed patent medicines, dragged to doctors, forced to submit to radical and often painful modes of examination and treatment.

Children themselves, usually outspoken and frequently unintentionally cruel, often provide additional situations of emotional strain, with their teasing and their adjectives of "looney" and "goofy" and such.

Is it little wonder therefore that we find the convulsing child excessively self-conscious, and sensitive to outside things? He may be either quietly unhappy or aggressively pugnacious at first, in what seems to him justified self-defence, but later fighting, through sheer habit, restless and given to temper tantrums, and eventually becoming a thoroughly disagreeable person.

Although we have traced briefly the development of disagreeable personality traits as appearing in many patients, it should be noted that in spite of frequent recurring seizures, some patients remain intellectually alert, stable and well behaved, displaying at no time the so-called epileptic personality make-up.

THE ELECTROENCEPHALOGRAPH

In recent years, interesting light has been thrown on another phase of the problem of the convulsive state by the use of an instrument known as the electroencephalograph. With this instrument differences in the potential set-up in the brain cells during their activity can be measured and recorded. These differences of potential are popularly known as brain waves. Study of these so-called brain waves has shown that not only does mental and physical activity set up changes in the brain cells, but also that certain characteristic brain waves appear constantly in certain types of cases. For example, the individual who is subject to frequent petit mal attacks will demonstrate characteristic slow flat waves, or the patient having a major convulsion will demonstrate bursts of characteristic sharp jagged waves.

The point of interest to us is that these disturbances in the brain waves may appear in the tracing of the instrument at times when there is no outward manifestation in the individual of convulsing or disturbed consciousness. Such signs of disturbance in the tracing are spoken of as sub-clinical attacks, attacks which although definitely present are not of sufficient intensity to show themselves outwardly in recognized form.

I am indebted to Dr. W. A. Hawke for the following example of such a case:

> The patient had always been a difficult child due to stubbornness, irritability, disobedience and destructiveness. Major convulsions had occurred from the age of eighteen months to three years, but the boy, now twelve years of age, had had no seizures for nine years. In school the patient was retarded about one grade below mental age grade expectancy. Special difficulty had been shown in reading. Behaviour and learning ability in school was reported as quite variable. Teachers complained of stubborn behaviour and fluctuating temperament. General intelligence according to verbal and performance tests was dull normal. I.Q. 85. Physical examination was negative.
>
> Electroencephalogram demonstrated a fairly normal record on the boy's good days. Records taken on his bad days showed trains of large smooth waves, with rarely any normal rhythm.

This would tend to show that not only are we faced with the problem of the convulsive state, where obvious minor or major attacks are present, but fluctuations in individual behaviour may be due to the presence of so-called sub-clinical attacks.

MANAGEMENT OF THE CONVULSIVE CHILD

The sane management of the child suffering from convulsions is one based on moderate freedom of activity and a regular routine with regular hours of sleep, work and play. Far too much restriction of activity is often imposed and many children are forced to live dull, uninteresting lives by physicians and parents who, acting on the premise that quietude reduces the attacks, eliminate most of the interesting things from their day. It is true that excessive stimulation in these as in other cases is unwise, but as far as possible the patient should be permitted to participate in all average activity, restriction being imposed *only* where situations hold definite potential danger.

Active participation in games is important. It has been recognized for years that seizures rarely occur during physical activity. The attacks usually come on during periods of quiet or waiting or when asleep. One of the most recent methods of treatment advanced has been based entirely on an intensive course of physical training. Participation in active play will also do much to prevent an invalid state.

The child should be taught to face the facts of his case and be encouraged to accept the occurrence of an attack as an experience which, though momentarily embarrassing, may not indicate any other change. The child cannot be taught to adopt this attitude, however, unless those around him can learn to show by their actions that they too are not alarmed, but believe, as we wish the child to believe, that he can become a useful child.

Constant supervision is irksome and this supervision frequently creates a greater problem than the physical injury it is meant to prevent.

A wholesome environment and a confident attitude in parents, teachers and friends are just as important in treatment of these afflicted children as the best of medical care.

A Tuberculosis Survey in Bridgetown, Nova Scotia

J. S. ROBERTSON, M.D., D.P.H.
Divisional Medical Health Officer
Department of Public Health of Nova Scotia, Yarmouth, N.S.

AT the request of the local authorities and through the co-operation of the health officer, Dr. E. B. Hall, a survey was undertaken in the Bridgetown School to determine the amount of tuberculous infection and tuberculous disease among the teachers and pupils. Bridgetown is a municipality of almost 12,000 population located in Annapolis Valley. There were no recorded deaths from pulmonary tuberculosis in Bridgetown during the years 1935, 1936, and 1937. No information is available as to whether or not any Bridgetown residents died from tuberculosis in the Nova Scotia Sanatorium or other institution. The fact that there are apparently few, if any, open cases of tuberculosis in the town is important in relation to the results of this survey.

The survey comprised the tuberculin testing of the pupils and teachers and the X-raying of all positive reactors. Before testing, consent slips giving an explanation of the procedure were sent to the parents or guardians of all pupils. Following the test, another slip was given to all pupils tested, containing instructions to the parents or guardians for the care of the test area and a further explanation of the test. Miss G. Anderson, public health nurse, assisted in completing arrangements for the test and also assisted in the testing and X-raying of those pupils whose parents or guardians had given consent.

The inclusion of the teaching staff in such a survey is important because the teachers are in contact with the pupils for long periods five days of the week. The presence of tuberculosis in the teacher therefore is of much greater importance as a source of infection than disease in any one of the pupils. In all such surveys an attempt should be made to insure that the teachers are included.

There is a definite distinction to be made between tuberculous infection and tuberculous disease. It does not necessarily follow that a person with a positive tuberculin test will be found to be suffering from tuberculous disease. It has been shown that newborn infants, even those of parents suffering from open tuberculosis, show no evidence of tuberculous disease at birth, and it is only after they are in contact with an open case of tuberculosis for a time that they may show evidence of being infected.

When a few tubercle bacilli gain entrance to the body, they cause a reaction. This is known as a primary infection and it is believed that in over 95 per cent. of cases the infection progresses no further and becomes inactive. The only indication of infection in these cases is a positive tuberculin reaction and possibly X-ray evidence of calcification. If at a later date these persons, already infected with tubercle bacilli and having a positive tuberculin reaction, should be again in contact with an open case of tuberculosis, then the re-infection or adult form of the disease might result and frank tuberculous disease develop. It is these latter persons, suffering from tuberculous disease, that it is important to locate and treat.

It is possible to have the causative agent of tuberculosis present in the body throughout life without tuberculous disease developing. Only when some accident, such as a debilitating illness or contact with an open case of tuberculosis, supervenes, may further development occur, resulting in tuberculous disease requiring treatment.

Test Procedure

The test used in the survey was the tuberculin Patch test (Lederle). This test consists of the application to the arm of a strip of adhesive tape on which are placed two small squares impregnated with tuberculin. It avoids the use of a needle, causes no discomfort, and the result is easily interpreted. The result of the Patch test has been shown to be in close agreement with the ordinarily described intradermal "Mantoux" test; indeed, it has been indicated that, if anything, the tuberculin Patch test gives a higher proportion of positives.

The Patch tests were applied on February 8th and 9th. The results were read on February 12th and 13th. All positive reactors had an X-ray plate taken on February 13th and 14th.

Results

An excellent response was obtained. Out of a total school enrolment of 263, permission was given for the test in 233 (88.5 per cent.). Of these 233 tested, 32 gave a positive reaction, i.e., they showed evidence of having been

TABLE I

TUBERCULIN TEST RESULTS BY SEX

Sex	Total enrolled	Tested		Positive Reactors	
		Number	Per cent.	Number	Per cent.
Male	134	118	88	18	15.2
Female	129	115	89	14	12.1
Total	263	233	88.5	32	13.7

infected with the tubercle bacilli. The percentage of tuberculin-positive reactors was 13.7 per cent., a particularly low figure. The frequency of positive reactors was slightly higher in males (table I).

TABLE II

TUBERCULIN TEST RESULTS BY AGE

Age	Male		Female		Total		% Positive
	Tested	Positive	Tested	Positive	Tested	Positive	
5-9	39	6	31	4	70	10	14.2
10-14	55	6	38	3	93	9	9.6
15-19	24	6	46	7	70	13	18.5
Total	118	18	115	14	233	32	13.7

The 32 positive reactors, together with 3 others showing questionable tests, were X-rayed. Thirty-three showed evidence of primary infection but *none* showed evidence of the adult type of infection. *Not a single one showed evidence of a lesion requiring treatment*, and only 3 of the total number required further observation in order to make sure that no tuberculous disease was present. Of the total of 233 children tested, there was a history of contact in 25, only 4 of whom had a positive tuberculin reaction.

According to earlier figures and data from various other places, it was anticipated that 70 per cent. or more would show evidence of infection by the age of twenty. In this survey, 14.2 per cent. in the age-group 5-9 were tuberculin-positive, while in the age-group 10-14 only 9.6 per cent. were positive (table II). In the age-group 15-19 (all high school) the percentage of positive reactors was only 18.5 per cent., a remarkably low figure. These

TABLE III

SURVEY RESULTS BY SCHOOL GRADES

Grade	Number in grade	No. tested	% tested	Tuberculin Positive		Cases requiring treatment	Cases requiring observation
				Number	Per cent.		
I	31	30	96	5	16.6	0	0
II	19	17	89	2	11.7	0	0
III	23	23	100	4	17.3	0	2
IV	19	18	94	1	5.5	0	0
V	20	18	90	2	11.1	0	0
VI	16	16	100	2	12.5	0	0
VII	30	24	80	4	16.6	0	1
VIII	23	17	74	2	11.7	0	0
Total Common School	181	163	90	22	13.4	0	3
IX	21	17	80	0	....	0	0
X	25	23	92	7	30.4	0	0
XI	22	18	81	0	....	0	0
XII	14	12	85	3	25.0	0	0
Total High School	82	70	85.3	10	14.2	0	0
GRAND TOTAL	263	233	88.5	32	13.7	0	3

data indicate that few open tuberculosis cases are in the town and that "bovine tuberculosis" is probably not a prominent factor in the community infection.

The results of the survey by school grade are shown in table III. The percentage tuberculin-positive in the common school group was 13.4 and in the high school group 14.2, indicating that there is little increase in the frequency of infection in the higher age-groups.

Of the ten teachers on the staff, eight requested the test. Of these, four showed a positive reaction, and X-ray examination of these showed no evidence of an adult-type lesion. Eight of the teachers could therefore be considered free from tuberculous disease. It is desirable of course that the entire teaching staff should be shown to be free from tuberculous disease and I believe that at some future date it will be obligatory for all teachers, both public and high school, to have a yearly examination, both for their own benefit and in the interests of the pupils under their care.

SUMMARY

This survey shows that the frequency of tuberculous infection among the pupils in the Bridgetown school is exceedingly low—close to the figure given by health authorities as a minimum. With our present methods of tuberculosis control, both in humans and in cattle, this figure will eventually be reduced, and a survey ten years hence should show an infection rate below 10 per cent. Future findings will, of course, depend on the continued co-operation of the public with medical health authorities. It is most encouraging that nearly 90 per cent. of the parents in the town of Bridgetown were interested enough in the welfare of their children to have this work carried out. Probably many others in the community would have co-operated in the survey had they realized that there was nothing harmful or dangerous in the procedure used.

A report on all X-ray examinations made was forwarded to the medical health officer of the community so that any further information regarding these would be accessible and could be obtained by parents or guardians.

I would like to record my thanks to all who assisted in this work and to congratulate the town on having such a low index of tuberculous infection among its school children.

EDITORIAL SECTION

EDITORIAL BOARD

R. D. Defries, M.D., D.P.H., *Chairman*
N. E. McKinnon, M.B., and J. T. Phair, M.B., D.P.H., *Associate Chairmen*
R. L. Randall, *Editorial Assistant*

Gordon Bates, M.D. A. E. Berry, M.A.Sc., C.E., Ph.D. J. Craigie, M.B., Ch.B., Ph.D., D.P.H. J. G. Cunningham, B.A., M.B., D.P.H. C. E. Dolman, M.B., B.S., Ph.D., M.R.C.P., D.P.H. Grant Fleming, M.C., M.D., D.P.H. D. T. Fraser, B.A., M.B., D.P.H. Ronald Hare, M.D. (Lond.). Edna L. Moore, Reg.N. E. W. McHenry, M.A., Ph.D. G. D. Porter, M.B. A. H. Sellers, B.A., M.D., D.P.H. F. O. Wishart, B.A., M.D., D.P.H. J. Wyllie, M.A., M.D., Ch.B., B.Sc., D.P.H.

LAURELS FOR MANITOBA, QUEBEC, AND ALBERTA

AGAIN the congratulations of the Journal are extended to the Provinces of Manitoba and Quebec on their success in the third Canadian Rural Health Conservation Contest. For two years all the successful units came from these provinces. This year, however, the Province of Alberta shares for the first time in the list of awards.

The St. James-St. Vital Unit in Manitoba receives, this year, the first award. As no unit is permitted to win first place in the contest for more than two successive years, a special award was granted the former dual winner, the unit serving the counties of St. Jean, Iberville, Laprairie and Napierville in Quebec. Of the four units granted awards of merit, three are in the Province of Quebec and, as previously noted, one is in Alberta.

The Contest Grading Committee this year, owing to the general excellence of the scores obtained, not only in Canada but in the United States, found it necessary to raise the minimum score. As the result of this action, units which formerly were included in the list of award winners do not appear in this year's list, although obtaining a mark equal to that of previous years.

The continued participation in the contest of health units which have not to date received an award is heartening to the committee. This attitude evidences on the part of these participants a true appreciation of the purpose of the contest, which is, briefly, an attempted self-appraisement of program and accomplishments in keeping with a reasonable and accepted standard.

The contest serves also to stimulate that desirable type of local pride which is an aid to the directing officer in securing financial and moral support for necessary extension of essential services.

The Canadian Public Health Association is deeply grateful to the W. K. Kellogg Foundation and to the American Public Health Association for their willing extension of the contest to Canadian health units.

SCHOOL HEALTH SUPERVISION IN SECONDARY SCHOOLS

THE evident reluctance of municipal authorities to sponsor school health supervision in secondary schools is not solely prompted by economic reasons. Lack of enthusiasm on the part of the teaching staff to find it a place on the rather over-full curriculum, and the fact that the preventable illness rate among this age-group is relatively low, also inhibit its general acceptance.

The extension of health instruction to the IX and X Grades has given new significance to the need for adequate student health service in these schools. If such a service is to justify its establishment, however, it must be more than a carry-over from the elementary school program, plus the examination of candidates for the school athletic teams. It must be designed to meet the health needs of the adolescent age-group. Those responsible for its conduct must appreciate not only the need for discovery and correction of existing physical defects, the protection against potential illness, and the medical direction of the physical activity program, but also that there is an extraordinary opportunity to aid these children in their most significant problem, namely, self-adjustment. No secondary school health scheme can be considered adequate unless it is prepared to try to meet this need.

In this issue Dr. D. V. Currey, Medical Health Officer of St. Catharines, Ontario, and Miss A. G. Nicolle, Supervisor of Public Health Nursing, discuss the objectives of an effective secondary-school health program and outline an approach which has been successfully made in that city. In St. Catharines the Department of Health is jointly responsible with the Board of Education for the school health program. The experiment which has been made in the high school has as its central thought the opportunity for health guidance which can be afforded by discussion of problems with individual pupils through the provision of health conferences. The attending physician is the adviser for the boys and a specially trained public health nurse conducts the conferences with the girls. Emphasis is placed upon health examinations, which are conducted by the pupils' private physicians. In this way the desirable relationship of the family physician and the teen-age pupil is encouraged. A dental survey of all pupils is made annually and they are urged to receive treatment, when necessary, from their family dentist. For those unable to afford treatment a weekly clinic is arranged outside the school. The plan which has been evolved in St. Catharines for providing health supervision in secondary schools merits careful study.

Awards in the 1939 Canadian Rural Health Conservation Contest

THE awards in the 1939 Rural Health Conservation Contests in the United States and Canada were announced by the Grading Committee on April 15th.

The first award in the Canadian Rural Health Conservation Contest, conducted by the Canadian Public Health Association in co-operation with the American Public Health Association and financed by the W. K. Kellogg Foundation of Battle Creek, went to the St. James-St. Vital Full-time Health Unit, Manitoba. The medical officer of the unit is Dr. I. M. Cleghorn, D.P.H. The St. James-St. Vital Unit had received awards of merit in both the previous contests.

In the 1939 contest awards of merit were given to the following units:

Terrebonne County Health Unit, St. Jerome, Quebec; Dr. F. Leclerc, D.P.H., Medical Officer.

Foothills Full-time Health District, High River, Alberta; Dr. A. Somerville, D.P.H., Medical Officer.

Nicolet County Health Unit, Nicolet, Quebec; Dr. Jean Paquin, D.P.H., Medical Officer.

Laviolette County Health Unit, Grand-'Mere, Quebec; Dr. E. Frenette, D.P.H., Medical Officer.

Awards of merit were thus received for a third time by the Terrebonne and Nicolet Units, and for a second time by the Laviolette Unit. The Foothills Unit, which received its first award of merit this year, had also participated in both the previous contests.

A special award for having won the Canadian contest twice and for having maintained its previous high standard during 1939 went to the health unit serving the counties of St. Jean, Iberville, Laprairie and Napierville, Quebec. The medical officer of this unit is Dr. A. Lapierre, D.P.H.

The competent manner in which a community is meeting its health problems is the basis upon which the awards are made. This does not necessarily mean that awards are made to the healthiest communities. A group of public health experts carefully appraise each participating county unit, grading it on the measures that it takes (1) to provide and safeguard its water supply; (2) to furnish adequate and safe sewerage disposal; (3) to reduce infant and maternal deaths; (4) to combat tuberculosis and syphillis; (5) to protect its citizens against other communicable diseases; (6) to insure healthy children; (7) to protect and safeguard its milk and other foods; (8) to promote effective co-operation with its physicians and dentists in furnishing necessary services to all those who need them; and (9) to enlarge and improve its lay-understanding of ways and means of preventing sickness and death and of maintaining good health.

Thirty units entered the contest and twenty-five completed all the requirements including the preparation of the detailed analysis of the health program which is known as the fact-finding schedule. Visits were made to the majority of the participating units by Dr. James Wallace, Field Director of the American Public Health Association. These visits were made at the request of the units and entailed travel throughout Canada, since three of the competing units were in British Columbia, three in Alberta, one in Manitoba, and the remainder in Quebec. Discussion of local problems with Dr. Wallace, the active co-operation of a local committee with the medical officer in preparing the fact-finding schedule, and the evaluation of the health program by the Grading Committee, are all important factors in making the contest one of the most effective means of strengthening rural public health services.

PUBLIC HEALTH ADMINISTRATION

Eugenics and the Family

THE eugenics movement seeks to make such changes in the psychological and social environment that, as a natural and largely unconscious process, the more competent and responsible parents in every region and in every occupational group will have larger families than at present, and those parents who do not respond to an improved environment will have fewer children than at present. In general, the eugenics movement holds that decisions as to size of family must rest with parents themselves. The only exception would be those parents likely to transmit to their offspring serious forms of hereditary defect."

These were the opening words of a statement by the Committee on Eugenics and the Family at the National Conference on Family Relations, held in Philadelphia in December 1939. The chairman of the Committee, Frederick Osburn, stressed the need for directing public opinion toward the objective and, as well, the need for research on the pertinent aspects of human heredity. The latter requires "the cooperation of medical men and geneticists." In the future the provision of instruction for medical students in "medical genetics" was said to be essential. Indeed the success of negative eugenics depends on enlisting the active interest of the profession.

The main interest of eugenics, however, lies in the distribution of births among the population and in problems associated therewith. The report of the Committee continues:

"Today, in the United States several trends are evident which greatly affect reproduction:

"*First:* The continuing urbanization of our people, with the increasing difficulty of rearing children under urban conditions.

"*Second:* Extension of birth control and the culture pattern of family limitation.

"*Third:* A constant increase in community services for children which tend to reduce the cost to parents for feeding, housing, educating, and giving other needed services to their children.

"The extension of birth control and the increase in community services for children are in effect population policies, whether or not consciously adopted with that purpose in mind. Studies by sociologists and students of population indicate their importance to reproduction. At present, the effect of birth control is felt in a rapid decline in births. Inertia is a more important factor than religious opposition in retarding the spread of contraception. The recent experiments in North and South Carolina indicate an underlying popular demand for contraception even in the most remote districts. Community services for children are as yet too limited to have any noticeable effect on the general birth rate. Ultimately, it is hoped that the reduction in the cost of rearing children, resulting from the services rendered by the community, will encourage responsible parents to have more children and thus tend to offset the reduction in births due to birth control. . . . Eugenic measures, in a society where parents are free to decide how many children they will have, will be concerned with the psychological influences, from infancy through adult life, which will produce in those persons most responsive to the best in their environment, a tendency to have more children than do those less responsive to their environment. And eugenics will be concerned with the development of a public opinion, not only in the general public, but more especially among doctors, nurses, ministers, and leaders of all sorts, which will be sufficiently discriminating to encourage

large families among certain parents, and small families among others. Modern psychology offers suggestive leads along these lines. Present expense of children has forced many superior parents to have small families. But, even if a larger part of the cost of rearing children is taken over by the community, the psychological atmosphere of the small family is likely to be self-perpetuating, unless psychological conditions are also changed."

The Committee emphasized the fact that eugenics requires a substantial proportion of large families, and on the other hand a considerable number of families must have few or none. A suggested distribution of sizes of family is suggested: No children, 17 per cent.; one child, 15 per cent.; two children, 16 per cent.; three children, 18 per cent.; four children, 19 per cent.; five children, 10 per cent.; and six children, 5 per cent. Such a scheme yields 262 children per 100 married women, a number sufficient for population replacement.

The obvious question: "How are we going to provide for the care of large families in an urbanized civilization?" is briefly discussed in the Committee's statement. Referring to present family income distribution in the United States, the following observations were made:

"The recent study of consumers' purchases, made by various government bureaus, indicates what happens to most urban families when there are three or four or more children. The proportion of total income spent on food goes up; but the cost per meal per person in the family goes down by almost one-half of the per person expenditure of couples without children. Thus, in most large families the children are at or below the margin of undernourishment. The proportion of income spent on housing remains the same; more children are crowded into the same number of rooms. All other expenditures are cut to make up the extra food budget; recreation, medical and dental services must be reduced to a very low level. How else can one rear four or five children on an income at best adequate only for two? Evidently there must be a new conception of the responsibilities of the community for child care. . . . The public must decide whether the children who will compose the next generation are more important to society than other groups now clamoring for public support. Only after changes in community services for children have been introduced, can the culture pattern of family limitation, the small family system, be broken down in such a way that births, instead of clustering around the two-child mode, will be voluntarily more frequent in some families and less frequent in other families. . . . The eugenic ideal of family life is essential to the continued success of democracy. And democracy in turn is essential to a sound eugenics, for democracy seems the only form of government which offers the necessary checks to an improper use of genetic knowledge. Just as democracy protects free speech and individual liberties, so it must protect parents in their freedom to decide on how many children they desire, and are able to care for."

APPOINTMENT OF THE HON. HENRI GROULX AS PROVINCIAL SECRETARY AND MINISTER OF HEALTH, QUEBEC

FOLLOWING the recent provincial elections, announcement was made of the appointment of the Honourable Henri Groulx, Member of the Legislature for the County of Outremont, as Provincial Secretary and Minister of Health for the Province of Quebec.

The Hon. Mr. Groulx was born in Montreal on May 21, 1888, the son of Fabien Groulx and Agnes Lalonde, daughter of Alexandre Lalonde. He was educated at Mont Saint-Louis School and at the College Saint-Laurent. Selecting pharmacy as his profession, Mr. Groulx entered the

School of Pharmacy of the Université de Montréal, graduating in September, 1914. In December, 1915, he established an important pharmacy, which he directed for a number of years. Because of the important part which he has played in the domain of pharmacy in Montreal, Mr. Groulx has been a member of the Pharmaceutical Council of Canada, president of the Council of the Old Pupils' Association of the School of Pharmacy of the Université de Montréal, president of the Pharmaceutical Association of the Province of Quebec, and a member of la Chambre de Commerce de Montréal. He was appointed a member of the Catholic School Commission of Outremont in July, 1934, and in the following year was made president of this Commission, a position which he still holds. In January last he was made a member of the Executive Committee of the Université de Montréal and of the Administrative Commission, to represent the School of Pharmacy.

RESOLUTIONS PASSED BY THE CANADIAN INSTITUTE OF SANITARY INSPECTORS

AT a recent meeting of the Dominion Executive Council of the Canadian Institute of Sanitary Inspectors, two resolutions, framed and passed by the British Columbia Branch, were formally approved. The first urged the enactment of legislation in British Columbia to require the sterilization of all glasses used in beer parlors. The resolution stressed the danger of transmitting communicable diseases through the use of the common drinking cup and through improperly washed glasses. Emphasis was laid on the danger of the transmission of respiratory infections and syphilis. The second resolution urged stricter sanitary control of the production of milk and the compulsory pasteurization of all milk supplies throughout British Columbia.

The Canadian Institute of Sanitary Inspectors is to be congratulated on the activity of its Branches and on its efforts to advance sanitary legislation in these two important fields.

RECENT DEVELOPMENTS IN THE PROVINCE OF QUEBEC

THREE new health units were established recently in the counties of Berthier, Charlevoix-Saguenay, and Richelieu, with a population of approximately 87,000. There are now forty-five units in the Province, providing full-time health services for fifty-five counties with a population of 1,488,530, or 45.5 per cent. of the population of the Province. Included in these counties are 21 cities and towns of 5,000 and over, with a population of 294,800, or 19.8 per cent. of the population served by the county health units.

* * *

The latest report of the Provincial Laboratories of the Ministry of Health indicates that from July 1, 1939, to March 1, 1940, 180,840 examinations were made. During this period, 43,542 examinations were made by the Division of Chemistry and Sanitation, 100,673 by the Laboratory of Serology, and 36,625 by the Laboratory of Bacteriological Diagnosis.

* * *

Three dental surgeons have been appointed by the Ministry of Health to carry forward the program of dental hygiene. Dr. Robert Trudell, of Louiseville, will serve in Maskinongé County, Dr. J. R. Hebert, of Shawinigan, in St. Maurice County, and Dr. Ernest Charron in the Montreal area.

A New Health Venture in Manitoba

In November, 1939, a new health venture was undertaken in Manitoba in connection with the Youth Training program. It was decided to undertake complete physical examination, including tuberculin and Wassermann tests, of three thousand students registered under different courses offered by the Youth Training plan. The Department of Health and Public Welfare was asked to supervise the work and to this end two temporary members, Dr. Cecil G. Sheps and Dr. F. Elizabeth McKim, were added to the medical staff, the funds for this purpose coming from the Youth Training appropriation. Two members of the regular medical staff, Dr. Maxwell Bowman and Dr. Marguerite Swan, assisted in some of the work since otherwise it would not have been possible to complete it in the alloted time. All students who required medical attention were referred to their own doctor for teatment and no attempt was made by the visiting physicians to suggest such treatment in any case.

In addition to the physical examinations, talks on social hygiene and other subjects were given to the groups by the visiting physicians and lectures were arranged for the whole community wherever possible. An outline of health was supplied to the leaders of all the groups and was taught to the students enrolled as part of the citizenship course. Free health publications have been available and the whole program seems to have been very successful. From the information made available a statistical report is being prepared and will be issued shortly.

Creation of a New Health Unit in Alberta

The Stettler Full-Time Health Unit, serving six rural municipalities and six towns and villages, with headquarters in the town of Stettler, was established last October, making full-time preventive health services available to 15,000 people in the district. Dr. M. G. McCallum is Medical Director of the unit. This is the fourth full-time health unit to be established in Alberta and there is a growing demand for the extension of this form of health service in the rural districts.

An Outbreak of Typhoid Fever in Manitoba

Sixty-four cases of typhoid fever in the city of St. Boniface and the municipality of Ste. Anne, adjoining the city of Winnipeg, were reported to April 9th. Four deaths occurred, but in general the cases were mild. The source of the outbreak appears to have been infected food. A complete investigation is being made by the Department of Health and Public Welfare, including laboratory studies of the food products and a search for a carrier.

Skin Patch Testing for Tuberculosis in Prince Edward Island

During 1939 a tuberculosis survey was conducted in sixty public and high schools in Prince Edward Island. Three thousand seven hundred and twenty-nine pupils under twenty years of age were given the Patch test. Of this number, 508 reacted positively (13.6 per cent.) and were given fluoroscopic or X-ray examination, with the following findings: 6 minimal cases, 1 far advanced, 3 inactive, and 3 suspicious. Another group of 274 persons 20 years of age and over was also given the Patch test and ninety-one (30 per cent.) were found to be positive. In 1938 2,500 pupils were skin-tested for tuberculosis and all the reactors were given fluoroscopic or X-ray examination. Prince Edward Island has pioneered in this method of detecting the presence of minimal tuberculosis in its early stages. It has been found that the service is popular and at the same time a satisfactory manner of detecting early tuberculosis.

BOOKS AND REPORTS

Text-Book of Public Health. By *W. M. Fraser and C. O. Stallybrass. 10th edition, 1940. Published by The Macmillans in Canada, St. Martin's House, Toronto. 504 pages. $6.25.*

THIS textbook first appeared in 1874 and was entitled MEDICAL POLICE and was an addendum of about sixty pages to Husband's TEXT-BOOK OF FORENSIC MEDICINE. In the eighth edition which appeared in 1915 the subject of public health only received consideration. It was under the authorship of Professor E. W. Hope. In the ninth edition Professor Hope had associated with him Dr. C. O. Stallybrass. In this tenth edition Professor W. M. Frazer of the University of Liverpool has become author.

The book is primarily designed for students in the British Isles who are preparing for the examinations leading to the Diploma in Public Health, the Diploma in Tropical Medicine, or for the M.B. examination in Public Health. The introduction, which deals with organization and administration, discusses exclusively legislation in Great Britain and the form of public health organization which there obtains. Chapters II, III, IV, V, VI, VII, and VIII are devoted to a consideration of meteorology; lighting, ventilation and warming; atmospheric pollution and smoke abatement; water; drainage; sewering and sewage disposal: disposal of refuse; housing and town planning: disinfestation. Subsequent chapters are devoted to the consideration of occupational hygiene, port health administration, nutrition and food inspection, vital statistics, epidemiology, infective diseases and disinfection, tuberculosis, maternity and child welfare, the school medical service, genetics, mental hygiene, the welfare of the blind, hospital administration, and medical aspects of civil air defence. Fifteen chapters are new or have been completely rewritten. The authors intimate that they have endeavoured to deal with the problems of public health in a practical fashion. Their experience as medical officers of health of a large urban municipality has enabled them to produce a book which appears to be entirely suitable for the purposes already indicated. There are sixty-four illustrations and thirty-seven tables. The selection of topics for extended consideration follows the usual plan of public health textbooks published in the British Isles. That is to say that general sanitation is dealt with at much greater length than is customary on this side of the Atlantic. The preventive aspects of obstetrics, paediatrics, psychiatry and general epidemiology are considered only briefly. Specific preventive medicine does not receive the extended treatment which is both warranted and desirable. References to original articles are not included. There is, however, a satisfactory subject index.

In general, this would appear to be a useful book for graduate and undergraduate students of public health in universities in the British Isles but not entirely satisfactory for similar groups of students in universities in Canada or the United States.

J. G. FitzGerald

Blood Groups and Blood Transfusion. *By Alexander S. Wiener. Charles C. Thomas, 220 East Monroe Street, Springfield, Ill., 1940. 292 pages. $5.00.*

IN this second edition the author has revised and expanded the material included in keeping with newer knowledge in the various phases of the subject. The four blood groups and blood transfusion receive a major share of attention, as is their due. The difficulties and pitfalls in blood grouping and

transfusion are pointed out with regard to their order of importance. The subgroups of Group A and Group AB and the agglutinogens M and N are dealt with fully and clearly. The chapters on heredity of the blood groups and anthropological applications may be of limited appeal apart from those with special knowledge and training in these fields but undoubtedly add to the value of the book. Discussion of blood groups and disease, individual differences in animal blood, and medico-legal problems in disputed parentage and crime serves to complete the story. The work is authoritative and comprehensive and the presentation clear and interesting. In bringing this field up-to-date the author has rendered a distinct service not only to the medical profession but to science in general.

F. O. Wishart

Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1939. *United States Government Printing Office, Washington, D.C., 1940. 175 pages. 75c.*

THE ANNUAL REPORT OF THE SURGEON GENERAL OF THE UNITED STATES PUBLIC HEALTH SERVICE presents a comprehensive account of the work during the fiscal year 1939. A preface by the Surgeon General precedes the more detailed statements on divisional activities. Notwithstanding a continuation of improvement in mortality experience, Dr. Parran warns against a sense of security. Mortality is but the end result of sickness and the volume of illness, both acute and chronic, with its tremendous toll in disability, medical costs and disruption of social relationships, should keep one on guard.

The report deals with the one hundred and forty-first year of the existence of the Service. The National Health Conference in July, 1938, was a development of first importance in respect to the National Health Program. The report of the Interdepartmental Committee to Co-ordinate Health and Welfare Activities included in its findings, the enunciation of certain principles and the making of specific proposals to implement its recommendations. The significance and influence of this event are profound.

The first full year under the Venereal Disease Control Act saw a doubling of the number of clinics reporting, expansion of laboratory facilities, an increase in the number of patients treated, etc. Nineteen states have passed laws requiring applicants for marriage licenses to obtain physical examination including a blood test for syphilis and fifteen states requiring blood tests for syphilis on all expectant mothers.

Researches conducted at the National Institute of Health are briefly reviewed including work in the field of virus diseases, nutrition, cancer, industrial hazards, etc. A survey of rheumatic fever and its complications in Philadelphia hospitals indicated high incidence among the lower income groups, 95 per cent. of cases being in that category.

Dr. Parran points out that mental and nervous disorders, "the largest unsolved problem in medicine", are a continued challenge. Over 500,000 patients are on the books of mental disease hospitals and 117,000 others are cared for in institutions for the mentally defective and epileptic. The need for fundamental research in this field is emphasized and progress in this direction is discussed.

The activities and accomplishments of the various divisions of the Service are dealt with separately in some detail, special emphasis being laid upon the highlights. As usual, the report of the Surgeon General is most stimulating and informative—a valuable record on health activity and progress, and a refreshing presentation of health data.

A. Hardisty Sellers

CURRENT HEALTH LITERATURE

Further Studies of the Intracutaneous Method of Typhoid Vaccination

THE experiments reported in this paper show that injection of 0.1, 0.15 and 0.2 cc. of typhoid vaccine by the intracutaneous route produces a somewhat greater agglutinin (H and O) and protective antibody response than does 0.5, 1.0 and 1.0 cc. given subcutaneously. In addition, troublesome local and systemic reactions were greatly reduced by the former method. In previously vaccinated individuals the agglutinin response following 0.1 cc. of typhoid vaccine intracutaneously was marked and equal to that following 1.0 cc. given subcutaneously. These results confirm and extend those previously reported by the author.

Louis Tuft, Am. J. Med. Sci., 1940, *199*: 84.

Chronic Arsine Poisoning Among Workers Employed in the Cyanide Extraction of Gold: A Report of Fourteen Cases

PRIOR to 1873 there were no instances of industrial poisoning from arsine. Since that time most of the cases reported have been caused by the contamination of natural materials or metals used in industry, but so far as can be determined from the literature, all hitherto reported have been acute or sub-acute in nature. In this paper the authors report an outbreak of non-fatal chronic poisoning among workers engaged in the extraction of gold by the cyanide process. A minor variation in the ordinary procedure led to the trouble.

A detailed description of the procedure in the mill is given together with that of the materials being treated. This is followed by a presentation of the outbreak of poisoning. Hematological findings, arsenic determinations on pubic hair and urine, blood chemistry, symptoms and physical findings including electrocardiographic interpretations, are presented and discussed.

The authors emphasize the importance of medical supervision of workers in an industrial operation. Full co-operation of the employer is invaluable.

F. M. R. Bulmer, H. E. Rothwell, S. S. Polack, and D. W. Stewart, J. Indust. Hyg. & Toxicol., 1940, *22*: 111.

Chancres Studied from the Public Health Point of View

THE importance of early diagnosis of syphilis by dark-field examination of chancre fluid is well recognized but the very limited number of cases thus diagnosed is probably not generally appreciated. Examination of 15,090 records selected at random from the active files of the New York City Department of Health revealed that only 971 or 6.43 per cent. had been definitely diagnosed by the dark-field method. Of this number approximately 3 per cent. only were seen in the firt 10 days after the appearance of the chancre; in 59 per cent. more than 30 days elapsed before treatment was commenced and in 7 per cent. 100 days elapsed. Further analysis showed that the incidence of infection was greatest in the decade 21 to 30 with the exception of coloured females where the peak was between 16 and 20 years. Marital infection was claimed in 34.5 per cent. of female cases as against 1.4 per cent. in males. Prostitutes were given as the source of infection by 78.8 per cent. of the males while 33.1 per cent. of the females stated that infection was acquired during the practice of prostitution. Extragenital chancres represented 5.7 per cent. of the total, their frequency being much greater in the female.

The need for health education of the public to seek medical advice for lesions of the skin or mucous membranes, genital or otherwise, which fail to heal within one week is stressed, as well as education of physicians as to the importance and value of dark-field examination. That efforts should be directed

to the problem of prostitution, marital infection and the high incidence in the 21 to 30 decade is emphasized.

Charles Walter Clarke, Ann. Int. Med., 1939, *13*: 928.

Trichinosis and Nonclinical Infections with Trichinella Spiralis

THIS article presents a comprehensive picture of the trichinosis problem. The life history of the parasite in the animal and human host, the course of the disease, its diagnosis, treatment, incidence and prevention are discussed. The estimated number of clinical cases of trichinosis occurring in the United States from 1842 to 1937 is between 5,000 and 6,000. That the incidence of infection in humans is very much higher is indicated by recent necropsy findings in which approximately 18 per cent. of diaphragms examined showed trichinella larvae. Clinical disease appears to be determined by the intensity of the infection and the location of the parasite within the host. Methods of prevention are directed towards destruction of the larvae by adequate cooking or other processing of all pork products and elimination of the source of infection of swine by care in feeding of herds.

W. Lee Lewis et al., J.A.M.A., 1940, *114*: 35.

The Prevention of Silicosis: Experimental Investigations on the Action of Certain Non-siliceous Dusts and Silica in the Origin and Development of Silicosis

RABBITS and guinea pigs were exposed to silica in combination with non-siliceous dusts to determine the inhibitory or enhancing action of the latter in the development of silicosis. Chemically indifferent dusts such as coal dust did not appear to affect the silicotic process, anthracosis and silicosis developing quite independently. Inhalation of alkaline dusts (soda and calcium hydroxide) did not effect the silicotic process but did produce lung damage with a resulting susceptibility to pulmonary infection. So-called "acute silicosis" in humans is possibly explained on this basis.

Positively charged metallic dusts, particularly aluminum (and less so iron and magnesium) had marked inhibitive effects on the development of silicosis in the experimental animals studied. The importance of the composition of inhaled dust and the possibility of practical measures applicable to humans are made evident by these studies.

Carl Naeslund, J. Indust. Hyg. & Toxic., 1940, *22*: 1.

Rocky Mountain Spotted Fever

RABBITS were subjected to a prolonged course of immunization with Rocky Mountain spotted fever vaccine and virulent tick virus. Sera from these animals were then tested for therapeutic value in guinea pigs infected with a guinea-pig passage virus of the Bitterroot strain of Rocky Mountain spotted fever. Five cc. of serum was given subcutaneously on the first two days of fever. Of thirteen control guinea pigs developing typical disease, twelve died while only three died out of twelve treated with serum.

Tests were also carried out on monkeys in which four out of four control animals died and four out of four treated with serum after the onset of symptoms lived. Titrations in guinea pigs showed a large amount of protective antibody in the rabbit serum.

Norman H. Topping, U.S. Pub. Health Rep., 1940, *55*: 41.

Some New Data on the Distribution of Poliomyelitis Virus

POLIOMYELITIS virus has been recovered from sewage from a hospital where cases of the disease were under treatment. This virus produced typical clinical and histological pictures in monkeys. Also, poliomyelitis virus has recently been recovered from the stools of 3 out of 12 apparently healthy children and from one healthy adult nurse, all of whom had been in intimate contact with cases of the disease. These findings appear to show that healthy carriers exist and are a probable source of spread, infection resulting from direct personal contact.

U.S. Pub. Health Rep., 1940, *55*: 25.